








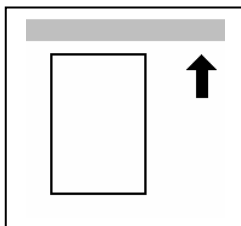
Model R-C4/R-C4.5
(Machine Code: B205/B209/D007/D008)
SERVICE MANUAL

21 July 2006
Subject to change

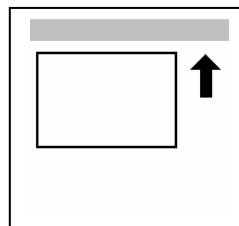
Conventions Used in this Manual

This manual uses several symbols.

Symbol	What it means
	Refer to section number
	See Core Tech Manual for details
	Screw
	Connector
	E-ring
	Clip ring
	Clamp




Lengthwise, SEF
(Short Edge Feed)



Sideways, LEF
(Long Edge Feed)

Cautions, Notes, etc.

The following headings provide special information:

 WARNING
FAILURE TO OBEY WARNING INFORMATION COULD RESULT IN SERIOUS INJURY OR DEATH.

 CAUTION
Obey these guidelines to ensure safe operation and prevent minor injuries.

Important

- Obey these guidelines to avoid problems such as misfeeds, damage to originals, loss of valuable data and to prevent damage to the machine.

IMPORTANT

- **ALWAYS OBEY THESE GUIDELINES TO AVOID SERIOUS PROBLEMS SUCH AS MISFEEDS, DAMAGE TO ORIGINALS, LOSS OF VALUABLE DATA AND TO PREVENT DAMAGE TO THE MACHINE. BOLD IS ADDED FOR EMPHASIS.**

NOTE: This information provides tips and advice about how to best service the machine.

IMPORTANT SAFETY NOTICES

PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the copier and peripherals, make sure that the copier power cord is unplugged.
2. The wall outlet should be near the copier and easily accessible.
3. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.
4. If a job has started before the copier completes the warm-up or initializing period, keep hands away from the mechanical and electrical components because the starts making copies as soon as the warm-up period is completed.
5. The inside and the metal parts of the fusing unit become extremely hot while the copier is operating. Be careful to avoid touching those components with your bare hands.
6. Keep the machine away from flammable liquids, gases, and aerosols. A fire or an explosion might occur.

HEALTH SAFETY CONDITIONS

Toner is non-toxic, but if you get it in your eyes by accident, it may cause temporary eye discomfort. Try to remove with eye drops or flush with water as first aid. If unsuccessful, get medical attention.

SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

1. Do not incinerate the toner cassettes. Toner dust may ignite suddenly when exposed to an open flame.
2. Dispose of toner cassettes in accordance with local regulations. (This is a non-toxic unit.)
3. Dispose of replaced parts in accordance with local regulations.

OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

1. The copier and its peripherals must be installed and maintained by a customer service representative who has completed the training course on those models.
2. The NVRAM on the Controller board has a lithium battery which can explode if replaced incorrectly. Replace the NVRAM only with an identical one. Do not recharge or burn this battery. Used NVRAM must be handled in accordance with local regulations.
3. The danger of explosion exists if batteries on the FCU, MBU and JBIG are incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.

LASER SAFETY

The Center for Devices and Radiological Health (CDRH) prohibits the repair of laser-based optical units in the field. The optical housing unit can only be repaired in a factory or at a location with the requisite equipment. The laser subsystem is replaceable in the field by a qualified Customer Engineer. The laser chassis is not repairable in the field. Customer engineers are therefore directed to return all chassis and laser subsystems to the factory or service depot when replacement of the optical subsystem is required.

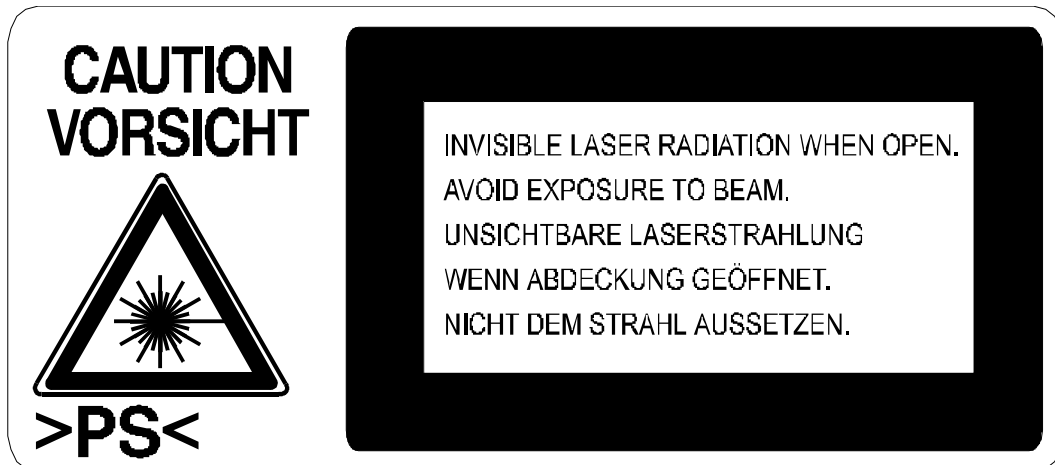
WARNING

Use of controls, or adjustment, or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

WARNING FOR LASER UNIT

WARNING: Turn off the main switch before attempting any of the procedures in the Laser Unit section. Laser beams can seriously damage your eyes.

CAUTION MARKING:



LASER-4.WMF

Safety Precautions for This Machine

Before moving the mainframe:

- Disconnect all peripheral units (finisher, LCT, etc.) from the mainframe.
- Pull the slide handles out of the mainframe and use them to lift the mainframe.

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1. INSTALLATION PROCEDURE

1.1 INSTALLATION REQUIREMENTS

1.1.1 ENVIRONMENT

1. Temperature Range: 10°C to 32°C (50°F to 89.6°F)
2. Humidity Range: 15% to 80% RH
3. Ambient Illumination: Less than 1,500 lux (do not expose to direct sunlight.)
4. Ventilation: Room air should turn over at least 30 m³/hr/person
5. Ambient Dust: Less than 0.10 mg/m³
6. Avoid an area which is exposed to sudden temperature changes. This includes:
 - 1) Areas directly exposed to cool air from an air conditioner.
 - 2) Areas directly exposed to heat from a heater.
7. Do not place the machine in an area where it will be exposed to corrosive gases.
8. Do not install the machine at any location over 2,000 m (6,500 ft.) above sea level.
9. Place the copier on a strong and level base. (Inclination on any side should be no more than 5 mm.)
10. Do not place the machine where it may be subjected to strong vibrations.

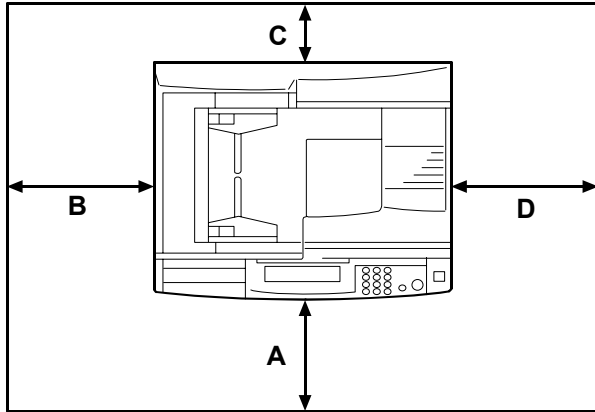
1.1.2 MACHINE LEVEL

Front to back: Within 5 mm (0.2") of level

Right to left: With in 5 mm (0.2") of level

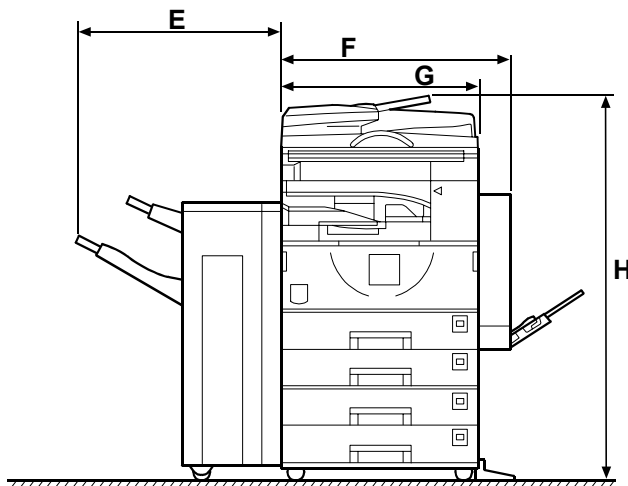
1.1.3 MINIMUM SPACE REQUIREMENTS

Place the copier near the power source, providing clearance as shown:



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- A: In Front: Over 750 mm (29.6")
- B: Left: Over 100 mm (0.4")
- C: To Rear: Over 100 mm (0.4")
- D: Right: Over 100 mm (0.4")



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- E: 620 mm (24.4")
- F: 640 mm (25.2")
- G: 550 mm (21.7")
- H: 1137 mm (44.8")

NOTE: The 750 mm recommended for the space at the front is only for pulling out the paper tray. If an operator stands at the front of the copier, more space is required.

1.1.4 POWER REQUIREMENTS

CAUTION

1. **Make sure that the wall outlet is near the copier and easily accessible.
Make sure the plug is firmly inserted in the outlet.**
2. **Avoid multi-wiring.**
3. **Be sure to ground the machine.**

1. Input voltage level: 120 V, 60 Hz: More than 12 A
220 V ~ 240 V, 50 Hz/60 Hz: More than 7 A
110V, 50 Hz/60 Hz: More than 13 A
2. Permissible voltage fluctuation: $\pm 10\%$
3. Do not set anything on the power cord.

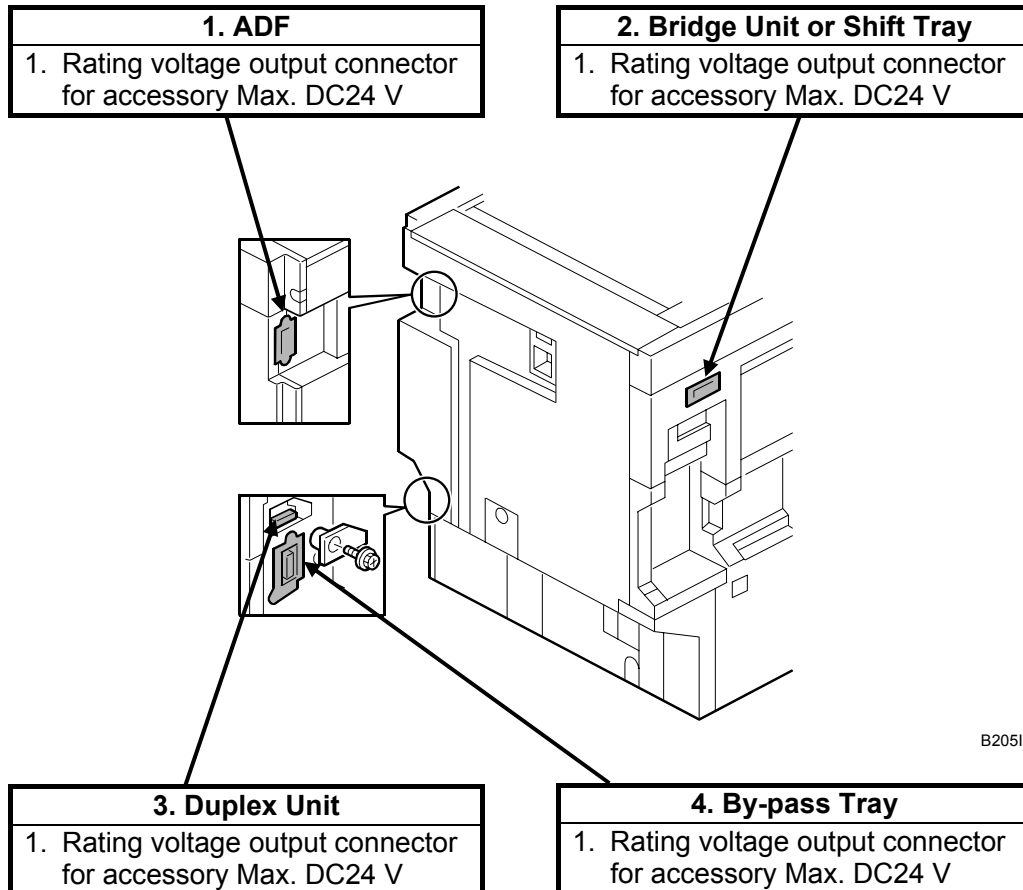
1.2 COPIER INSTALLATION

1.2.1 POWER SOCKETS FOR PERIPHERALS

CAUTION

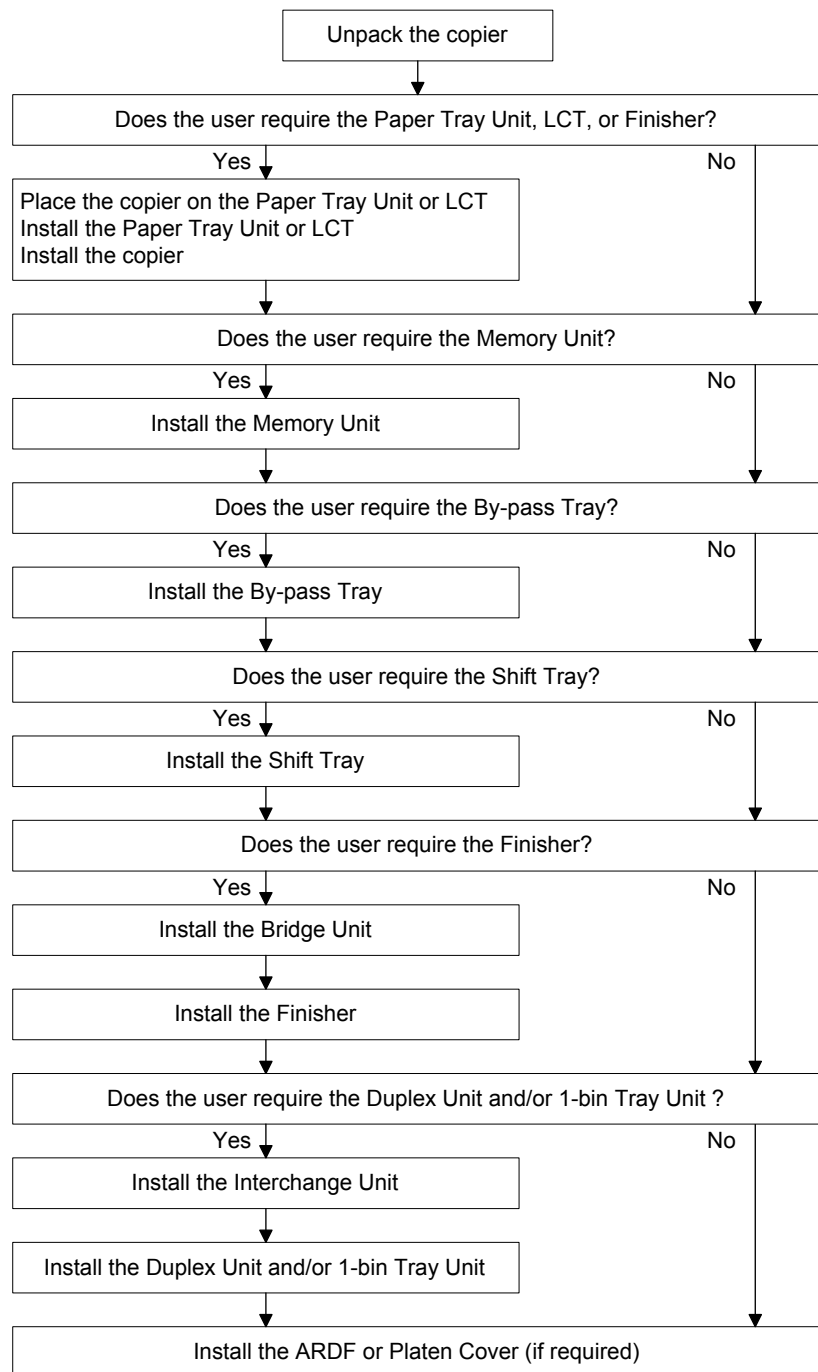
Rating voltage for peripherals.

Make sure to plug the cables into the correct sockets.



1.2.2 INSTALLATION FLOW CHART

The following flow chart shows how to install the optional units more efficiently.



B089I513.WMF

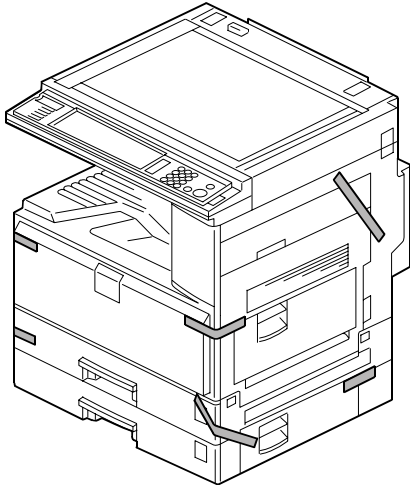
1.2.3 ACCESSORY CHECK

Check the quantity and condition of the accessories in the box against the following list:

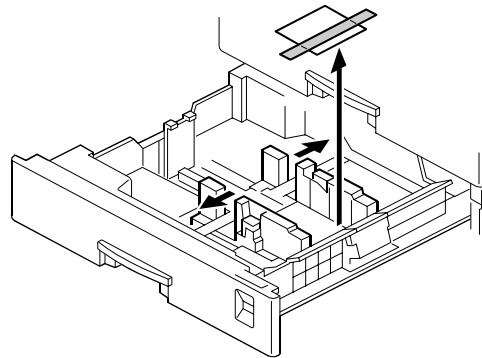
Description	Q'ty
1. Paper Tray Decal.....	1
2. Emblem Cover.....	1
3. Emblem	1
4. Model Name Decal	1
5. End Fence	1
6. HDD Caution Decal (-17, -29, -57 only).....	1
7. Operating Instructions – System Setting.....	1
8. Operating Instructions – Copy Reference.....	1

1.2.4 INSTALLATION PROCEDURE

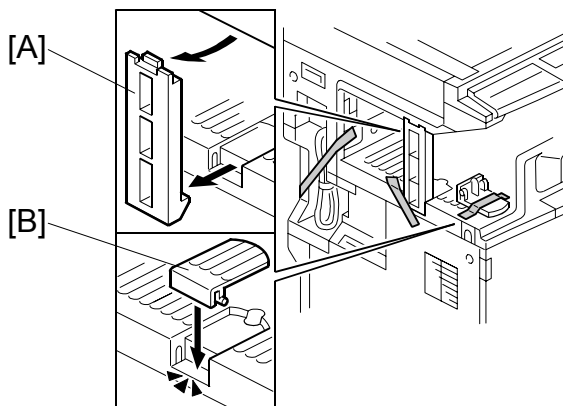
Tapes and Retainers



B205I104.WMF



B205I904.WMF



B205I905.WMF

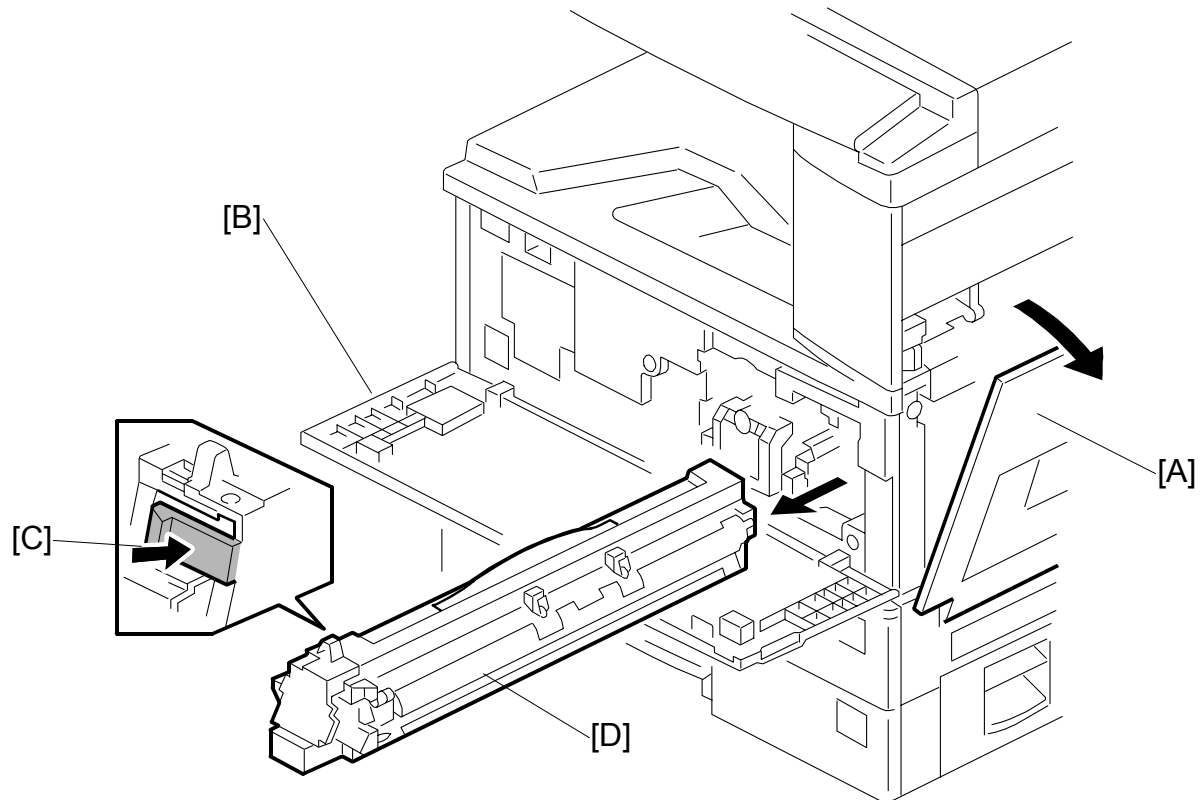
⚠ CAUTION

Unplug the machine power cord before starting the following procedure.

If the optional paper tray or the optional LCT is going to be installed now, put the copier on the paper tray unit or the LCT first, then install these options, then install the copier.

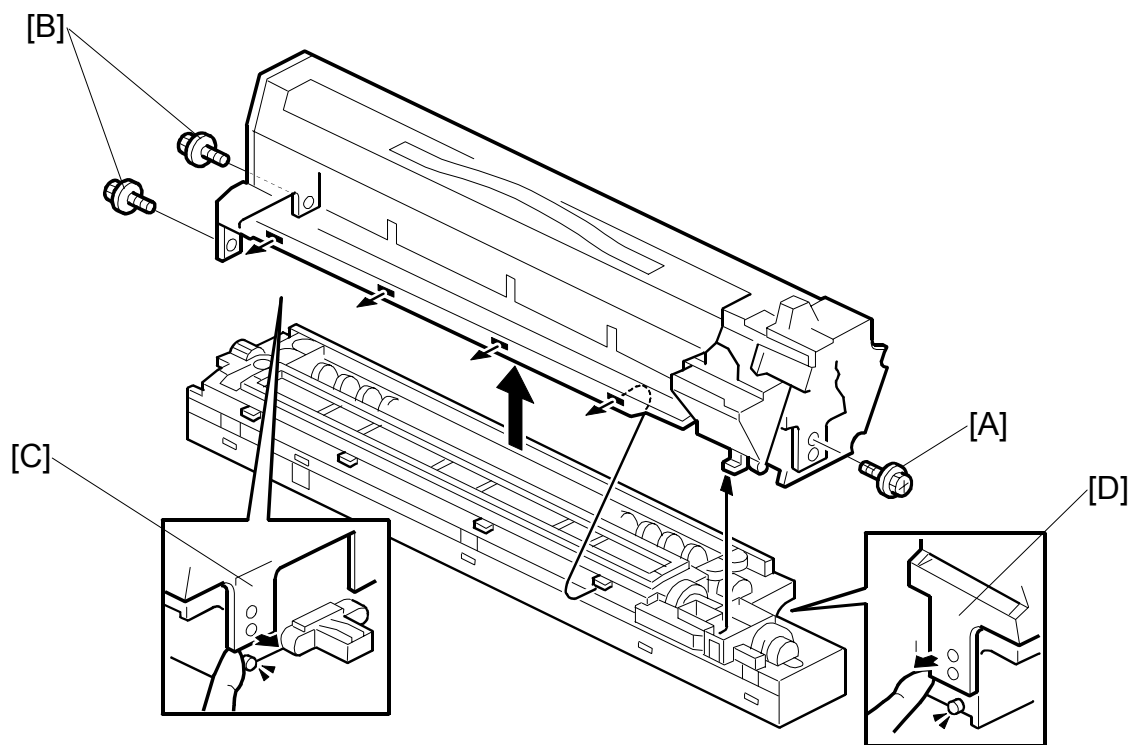
NOTE: Keep the shipping retainers after installing the machine. They will be reused if the machine is moved to another location in the future.

1. Remove the tapes and the shipping retainer [A] on the exterior of the copier.
2. Install the end fence [B].

Developer

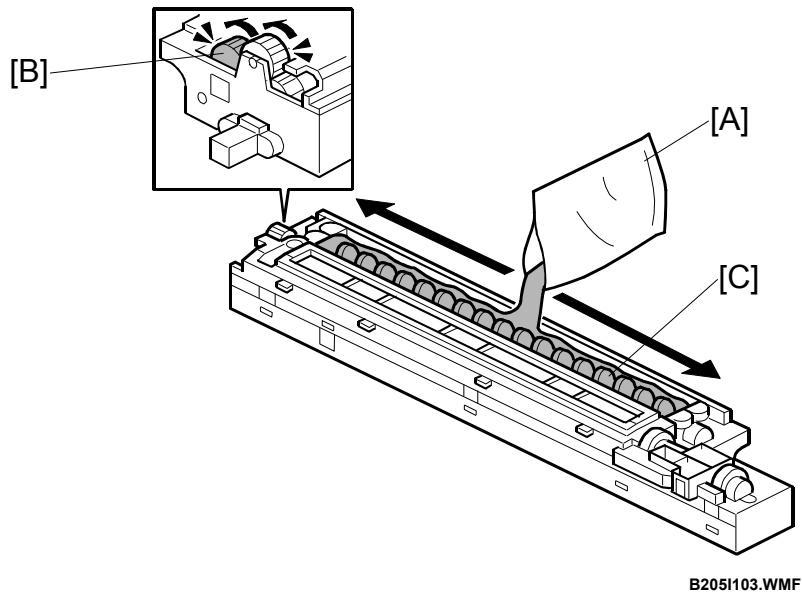
B205I920.WMF

1. Spread the vinyl sheet provided with the developer kit on a flat surface.
2. Open the right door [A]
3. Open the front door [B].
4. Push the latch [C] and remove the PCU [D].



B2051102A.WMF

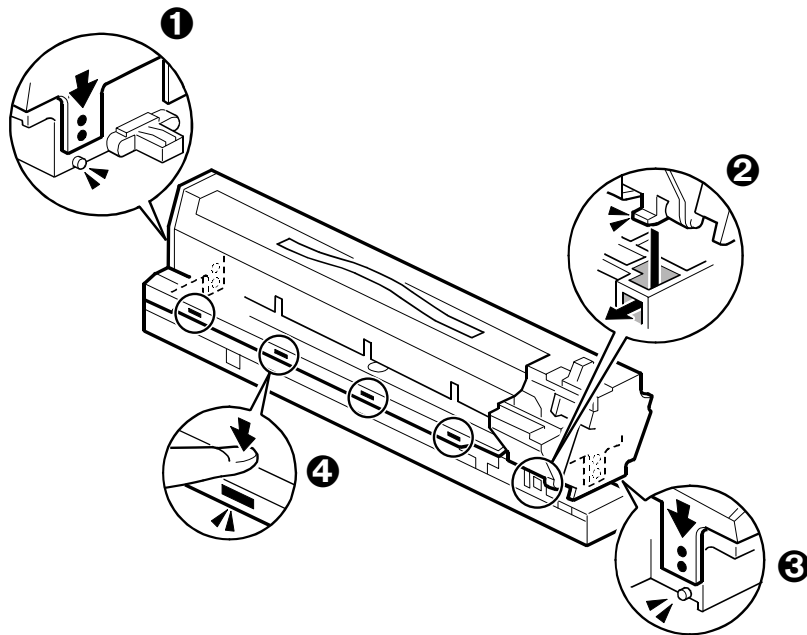
5. Remove the front screw [A] (⚙ x1)
6. Remove the rear screws [B] (⚙ x2)
7. Release the rear tab [C] then front tab [D], then separate the top and bottom.
Important: Be sure to release the rear tab first and the front tab second.



8. Open the developer pack [A].
9. While turning the black gear [B], slowly move the pack left and right and pour half of the developer over the auger [C].
10. Continue to turn the black gear until the developer is level.
11. While continuing to turn the black gear, slowly move the pack left and right and pour the remaining half of the developer over the auger until the developer is level.

Important

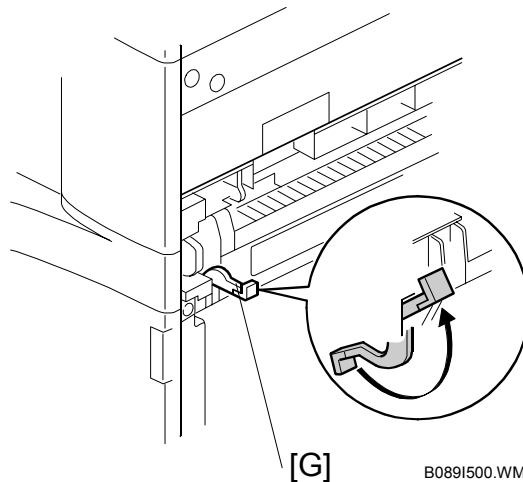
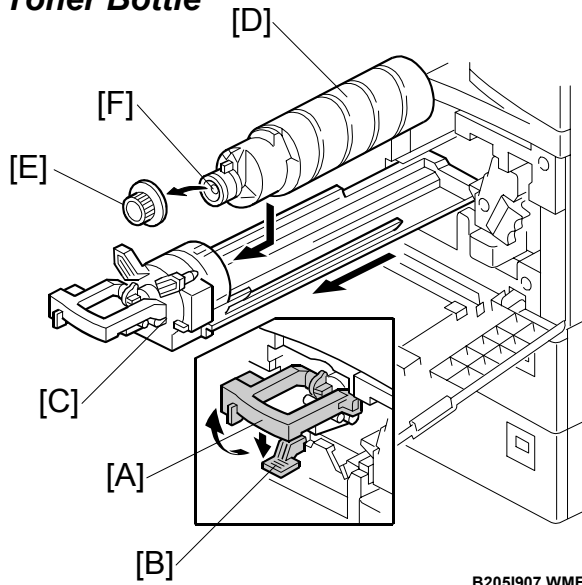
- Be careful. Do not spill developer on the gears and sponges.
- If you accidentally spill developer on the gears or sponges, remove it with a magnet or the tip of a magnetized screwdriver.

Re-assembly

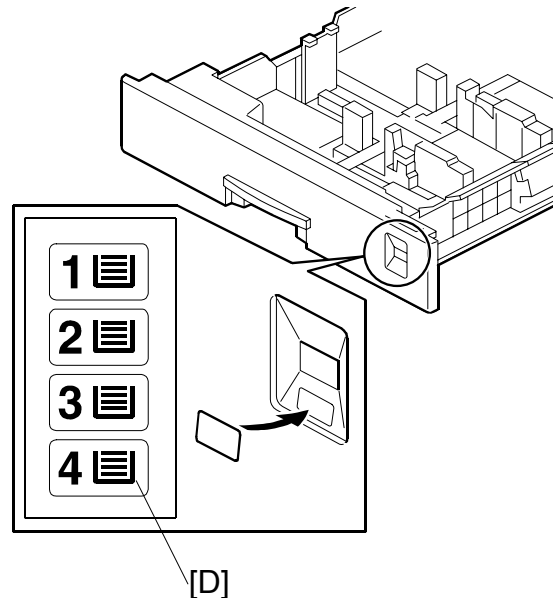
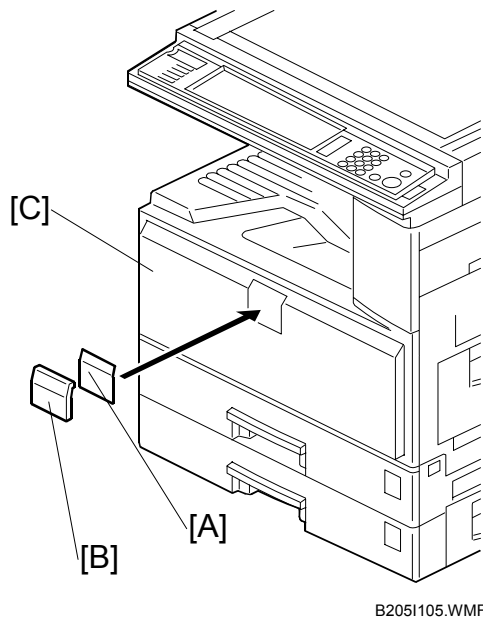
1. Make sure that all of the holes and tabs on are engaged at **1**, **2**, **3**, and **4**. Then push down to lock the tabs on the front and rear end of the PCU.
2. Make sure that the holes for the screws on the front and rear end of the PCU are aligned correctly. If the holes are not aligned correctly, make sure that the tabs at the front, rear, and left side of the PCU are engaged correctly.

Important

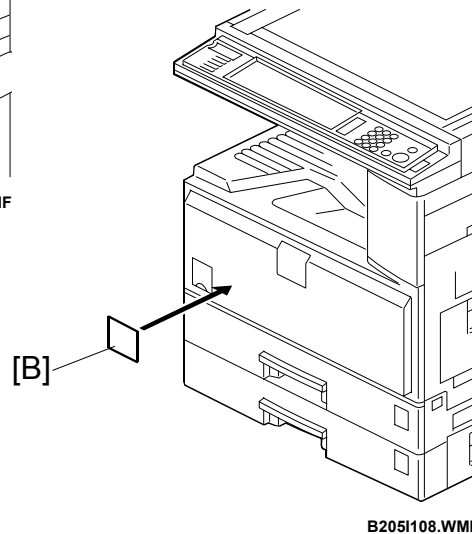
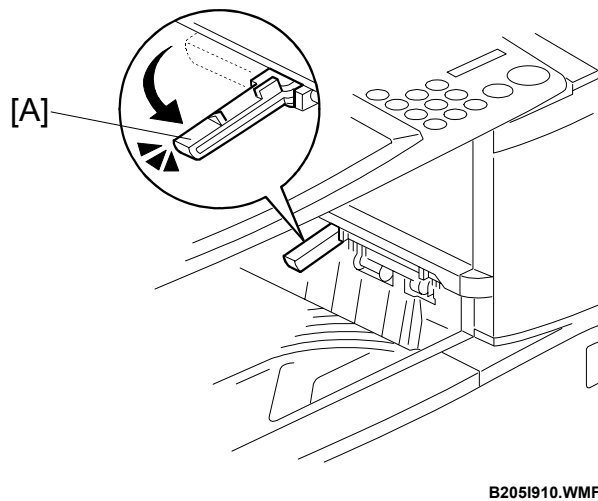
- Reattach the rear screws (⚙ x2) first, then reattach the front screw (⚙ x1).
- Do not push down on the top of the PCU when you attach the rear and front screws

Toner Bottle

1. Raise the toner bottle holder lever [A], push lever [B] down, and pull the toner bottle holder [C] out.
2. Shake the toner bottle [D].
NOTE: Do not remove the toner bottle cap [E] until after shaking.
3. Unscrew the bottle cap [E] and insert the bottle into the holder.
NOTE: Do not touch the inner bottle cap [F].
4. Reposition the holder and press down the holder lever to secure the bottle.
5. Open the right cover.
6. Rotate the green fusing pressure lever [G] to the up position.

Emblem, Decals

1. Attach the emblem [A] and panel [B] to the front door [C].
NOTE: Push the panel in until the emblem and panel move into their positions. You will hear a click.
2. Pull the paper tray out and turn the paper size dial to select the appropriate size. Adjust the side guides and end guide to match the paper size.
NOTE: To move the side guides, first pull out the tray fully, then push down the green lock at the rear of the tray.
3. Attach the appropriate paper tray number decal [D] to each paper tray.
NOTE: Paper tray number decals are also used for the optional paper tray or the optional LCT. Keep any remaining decals for use with these optional units.



4. If the optional bridge unit will not be installed, swing the sensor feeler [A] out.
5. Install the optional ARDF or the optional platen cover (see "ARDF Installation" (☛1.5) or "Platen Cover Installation" (☛1.14)).
6. If the HDD will be installed for a -17, -29, -57 model, attach the HDD caution decal [B] to the front cover.
7. Connect the copier and turn the machine on.
8. Go into the SP mode and do SP2801 (Developer Initialization).
9. Do some test copies to make sure that the machine operates correctly.

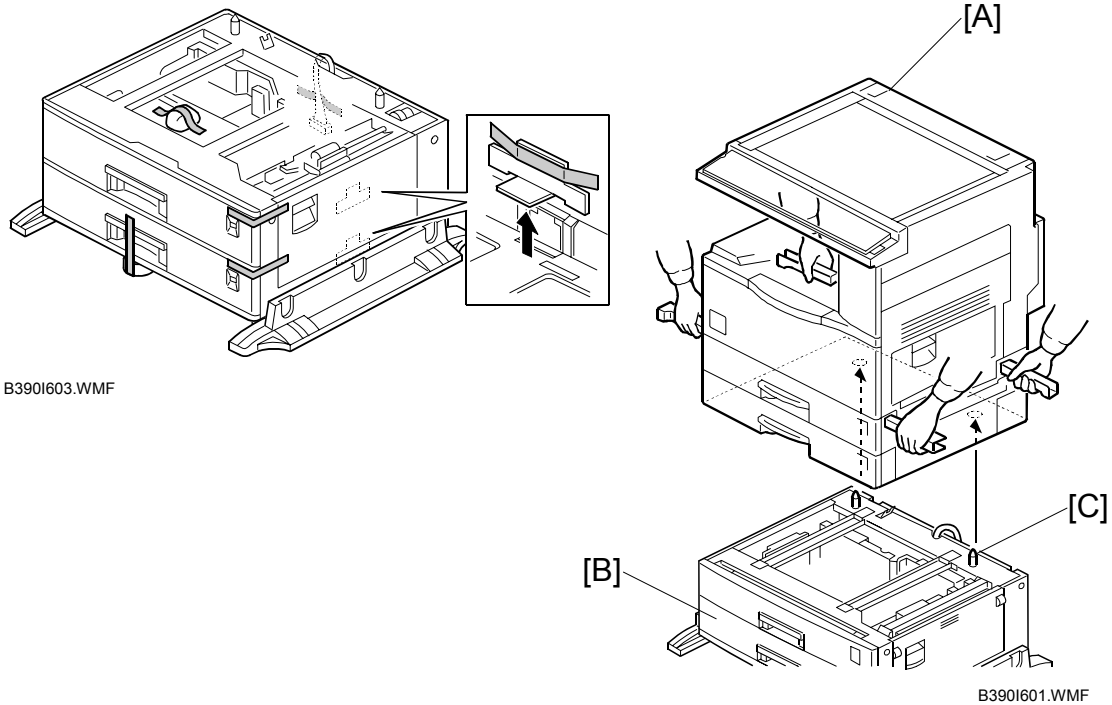
1.3 PAPER TRAY UNIT INSTALLATION

1.3.1 ACCESSORY CHECK

Check the quantity and condition of the accessories against the following list.

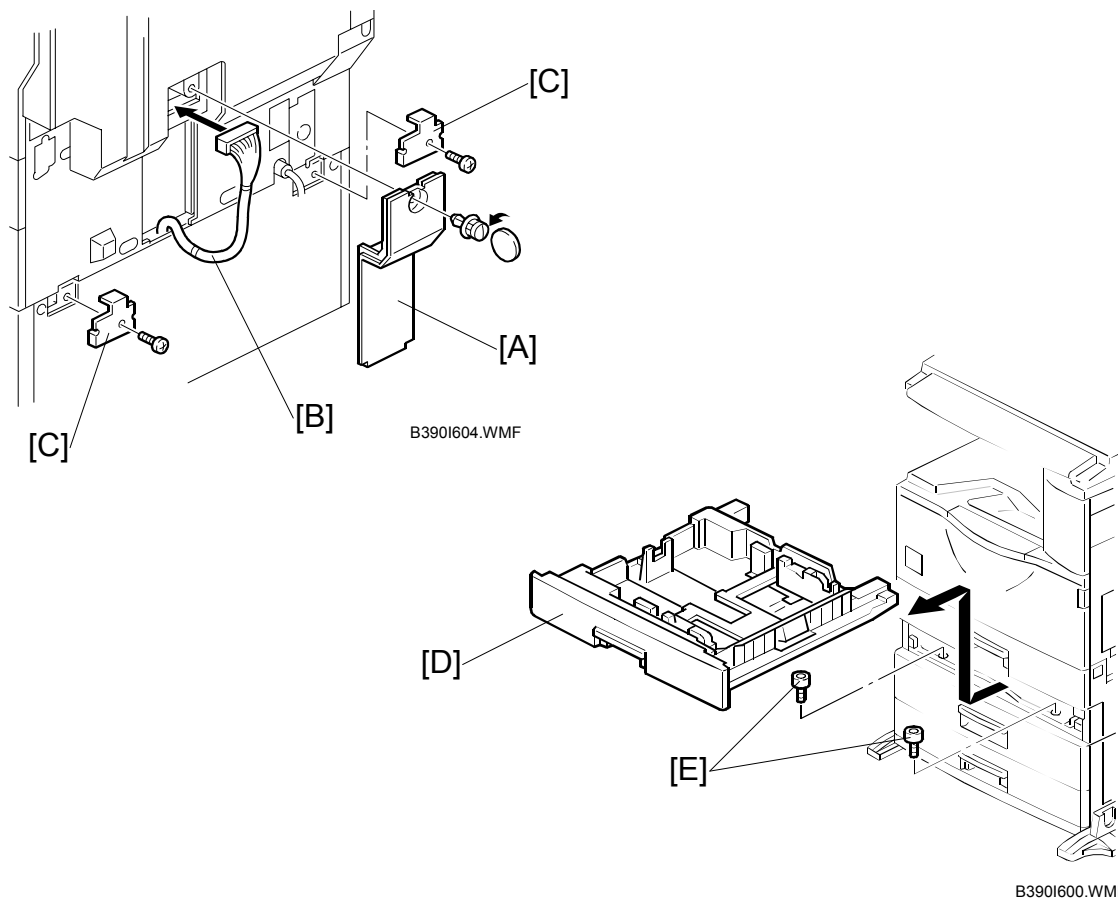
Description	Q'ty
1. Securing Bracket	2
2. Screw – M4 x 10	4

1.3.2 INSTALLATION PROCEDURE

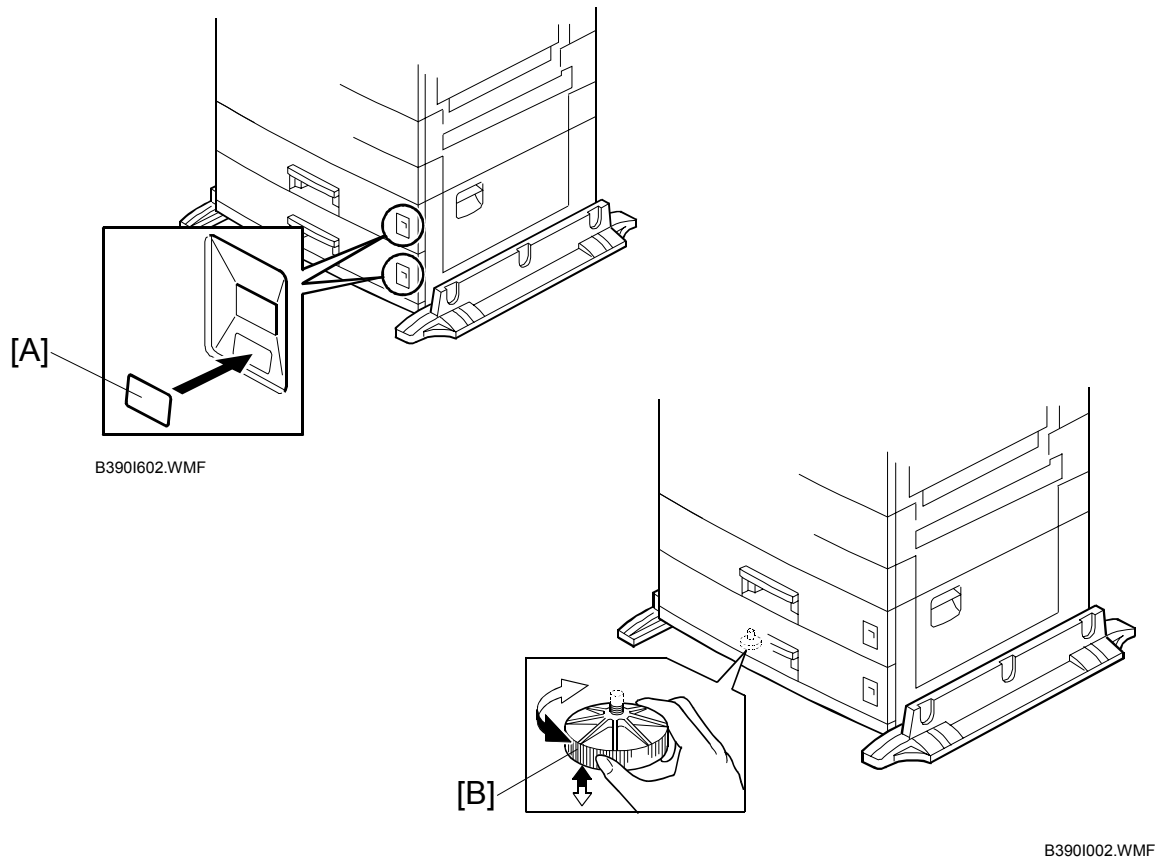
**⚠ CAUTION**

Unplug the machine power cord before starting the following procedure.

1. Remove the strips of tape.
2. Set the copier [A] on the paper tray unit [B].
NOTE: When installing the copier, be careful not to pinch the cable [C].



3. Remove the connector cover [A] (⌀ x 1).
4. Connect the cable [B] to the copier, as shown.
5. Attach a securing bracket [C] to each side of the paper tray unit, as shown (⌀ x 1 each).
6. Re-install the connector cover.
7. Remove the 2nd paper tray [D] and secure the paper tray unit [E] (⌀ x 2).



8. Reinstall the 2nd paper tray and attach the appropriate paper tray number decal [A] to the paper tray.
NOTE: The paper tray number decal is in the accessory box for the main copier.
9. Rotate the adjuster [B] until the machine cannot be pushed across the floor.
10. Load paper into the paper trays and select the proper paper size.
11. Turn on the main switch.
12. Check the machine's operation and copy quality.

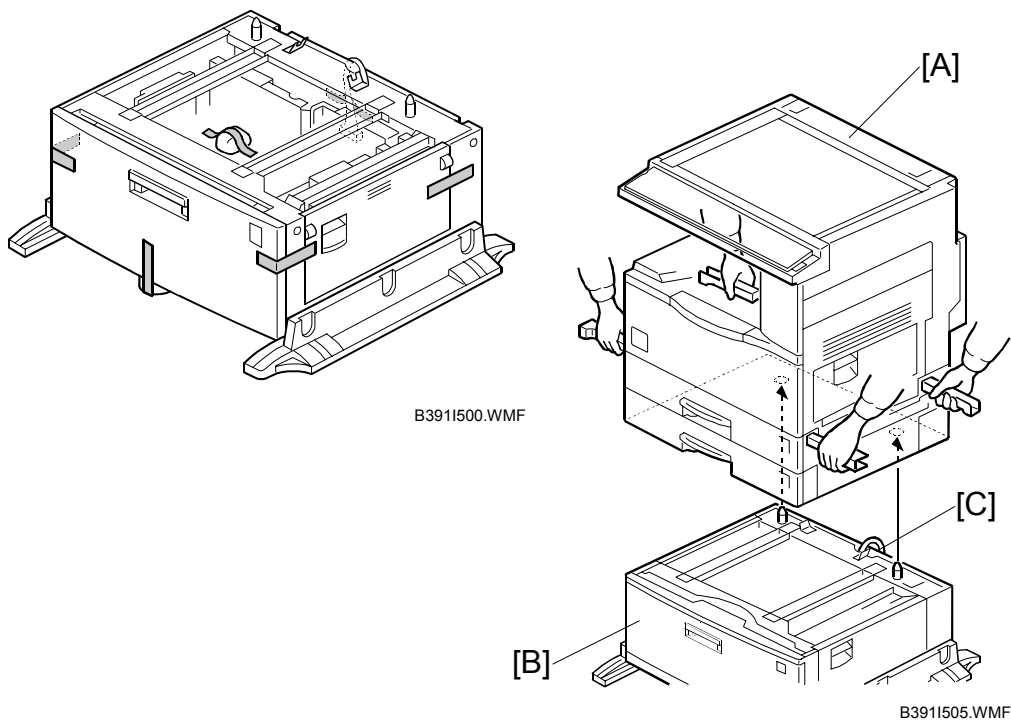
1.4 LCT INSTALLATION

1.4.1 ACCESSORY CHECK

Check the quantity and condition of the accessories against the following list.

Description	Q'ty
1. Securing Bracket	2
2. Screw – M4 x 10	4
3. Paper Size Decal	1

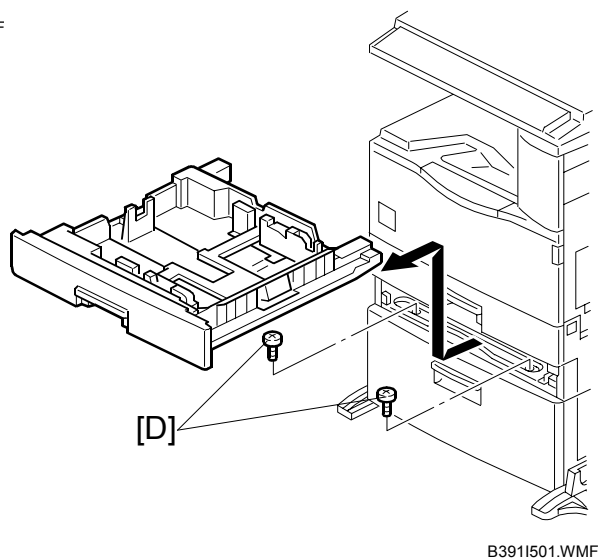
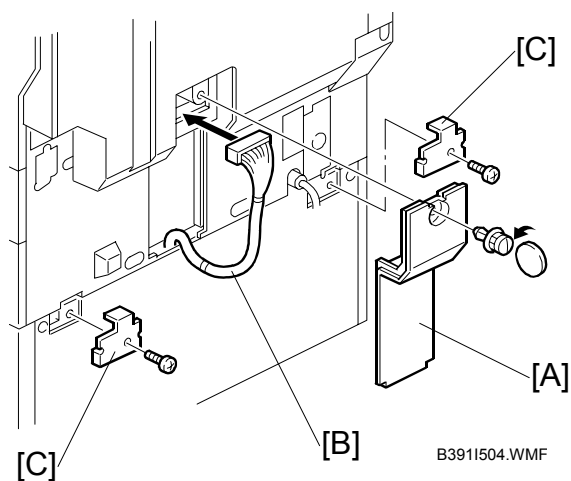
1.4.2 INSTALLATION PROCEDURE



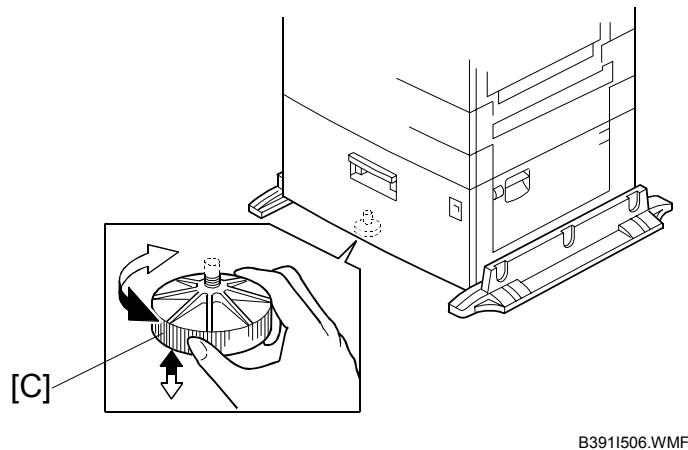
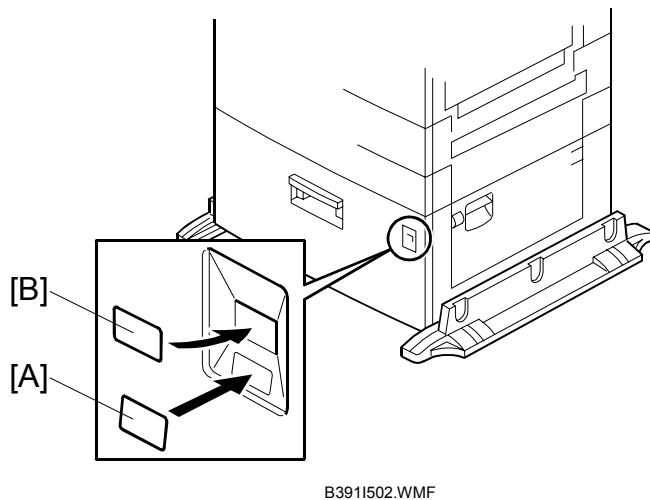
⚠ CAUTION

Unplug the machine power cord before starting the following procedure.

1. Remove the strips of tape.
2. Set the copier [A] on the LCT [B].
NOTE: When installing the copier, be careful not to pinch the cable [C].



3. Remove the connector cover [A] (⌀ x 1).
4. Connect the cable [B] to the copier, as shown.
5. Attach a securing bracket [C] to each side of the LCT, as shown (⌀ x 1 each).
6. Re-install the connector cover.
7. Remove the 2nd paper tray and secure the LCT [D] (⌀ x 2).



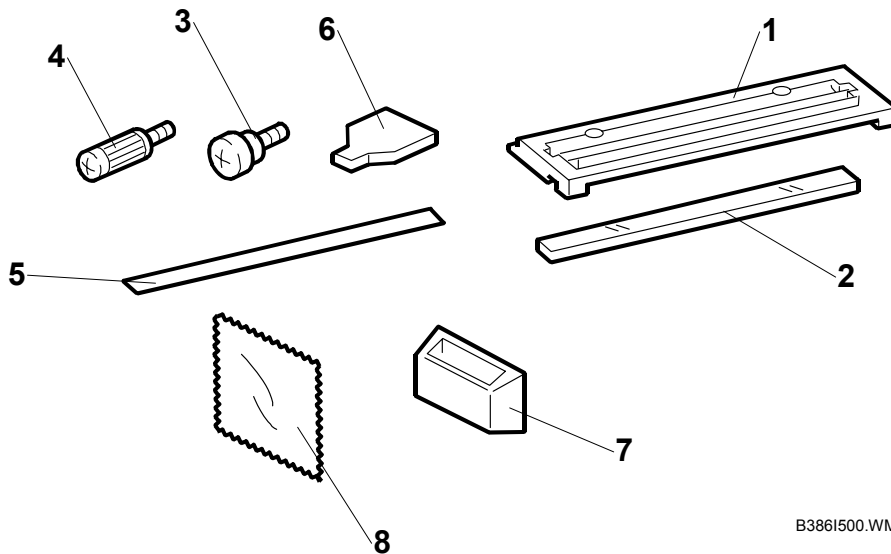
8. Load paper into the LCT.
9. Reinstall the 2nd paper tray and attach the appropriate paper tray number decal [A] and paper size decal [B] to the LCT.
NOTE: The paper tray number decal is in the accessory box for the main copier.
10. Rotate the adjuster [C] until the machine cannot be pushed across the floor.
11. Load paper into the paper tray and turn on the main switch.
12. Check the machine's operation and copy quality.

1.5 ARDF INSTALLATION

1.5.1 ACCESSORY CHECK

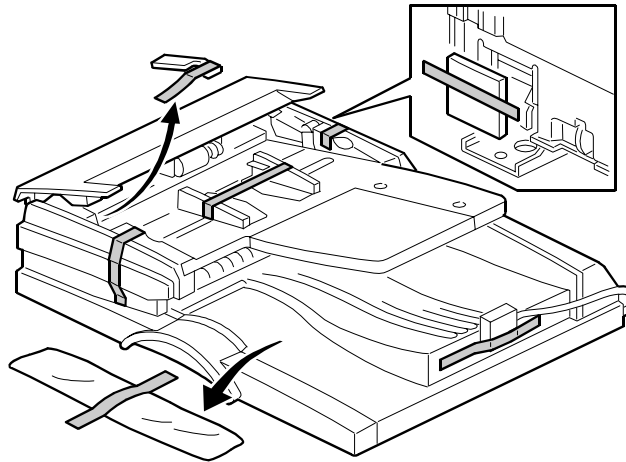
Check the quantity and condition of the accessories against the following list.

Description	Q'ty
1. Scale Guide	1
2. DF Exposure Glass.....	1
3. Stud Screw	2
4. Knob Screw	2
5. Original Size Decal	2
6. Screwdriver Tool.....	1
7. Cloth Holder.....	1
8. Cloth	1
9. Attention Decal – Top Cover.....	1
10. Attention Decal – Scanner	1



B386I500.WMF

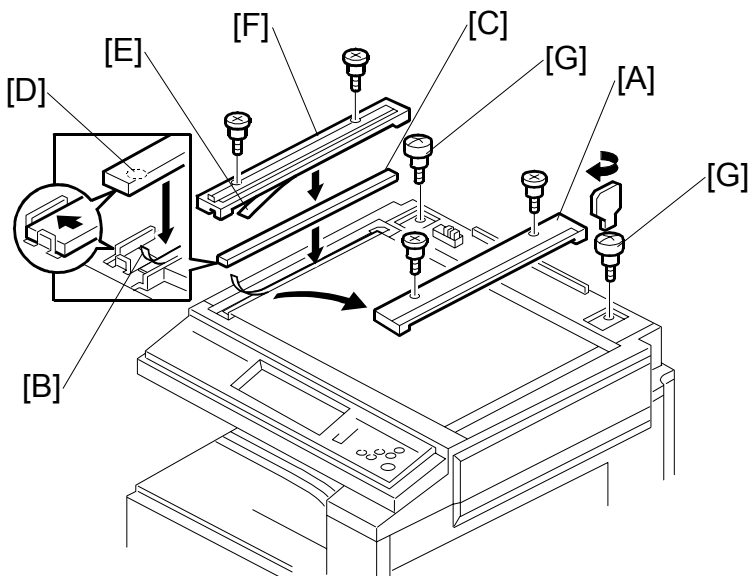
1.5.2 INSTALLATION PROCEDURE



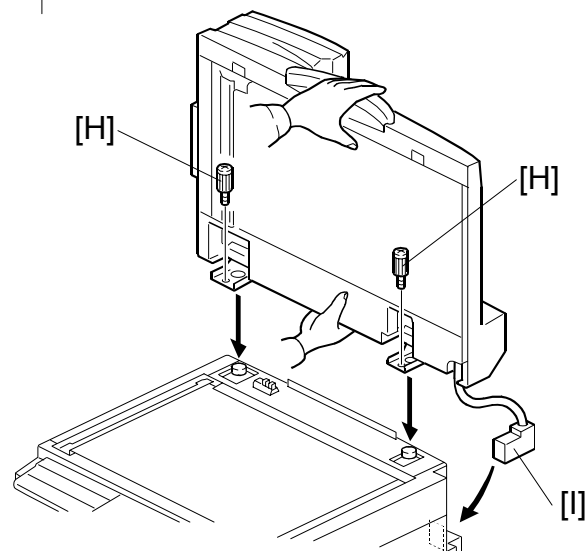
B386I101.WMF

⚠ CAUTION**Unplug the copier power cord before starting the following procedure.**

1. Remove the strips of tape.

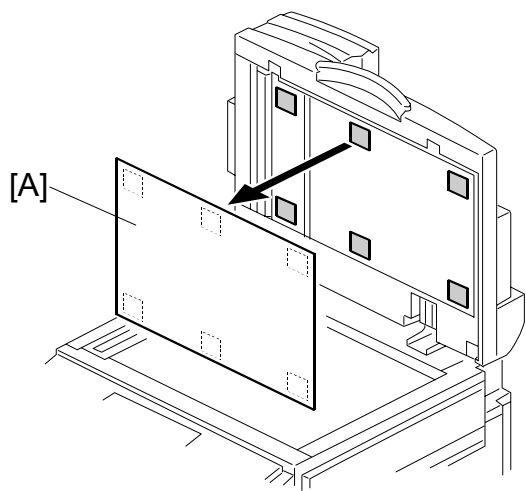


B3861107.WMF

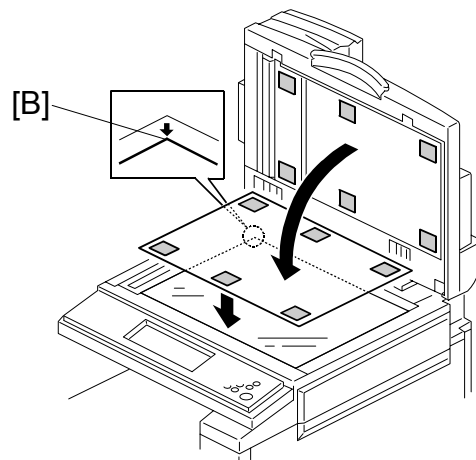


B3861104.WMF

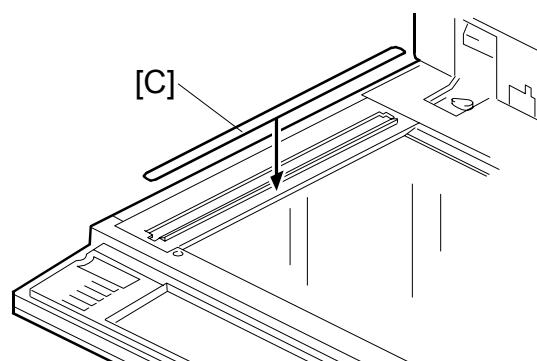
2. Remove the left scale [A] (⌀ x 2).
3. Peel off the backing [B] of the double-sided tape attached to the glass holder.
4. Place the DF exposure glass [C] on the glass holder.
NOTE: When installing the DF exposure glass, make sure that the white point [D] is on the lower front side of the glass, as shown.
5. Peel off the backing [E] of the double-sided tape attached to the rear side of the scale guide [F], then install it (⌀ x 2 removed in step 2).
6. Install the two stud screws [G].
7. Mount the DF on the copier, then slide the DF to the front as shown.
8. Secure the DF unit with two screws [H].
9. Connect the cable [I] to the copier.



B386i110.WMF

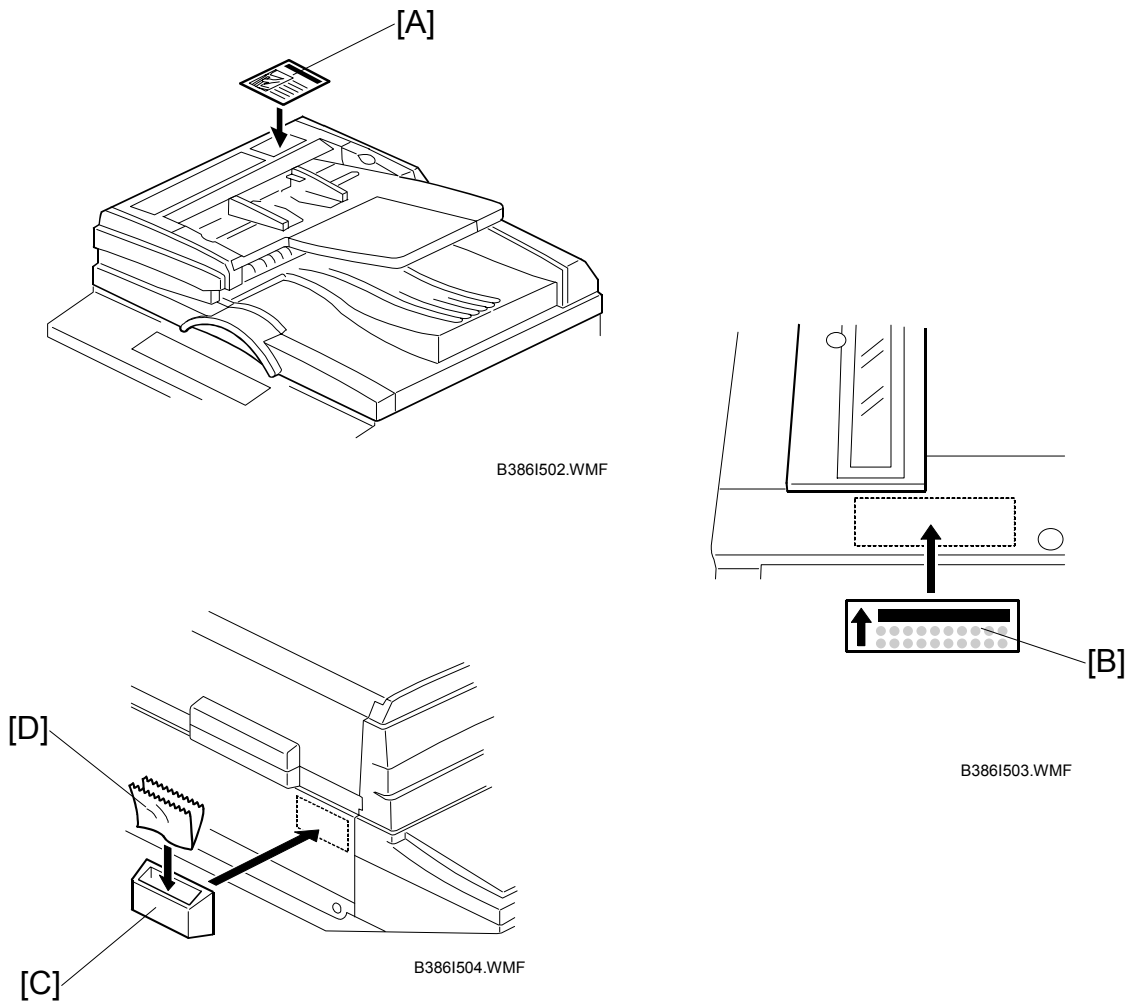


B386i111.WMF



B386i501.WMF

10. Peel off the platen sheet [A] and place it on the exposure glass.
11. Line up the rear left corner of the platen sheet flush against corner [B] on the exposure glass.
12. Close the ARDF.
13. Attach the appropriate scale decal [C] as shown.



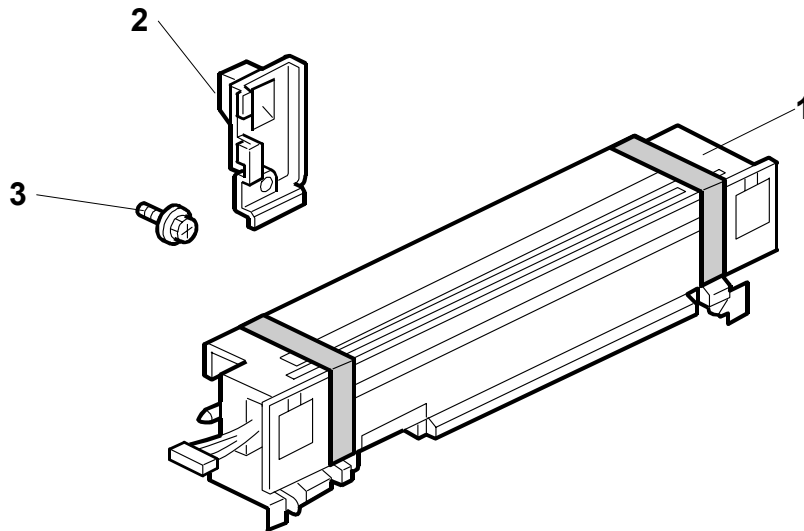
14. Attach the decal [A] to the top cover as shown, choosing the language most suitable for the machine installed.
15. Line up arrow on the decal [B] with the center of the ADF exposure glass as shown, and attach it to the cover. As with step 14, choose the language most suitable for the machine installed.
16. Attach the cloth holder [C] to the left side of the scanner as shown.
17. Insert the cloth [D] in the cloth holder.
18. Turn the main power switch on. Then check if the document feeder works properly.
19. Make a full size copy. Then check to make sure the registrations (side-to-side and leading edge) and image skew are correct. If they are not, adjust the registrations and image skew (refer to the service manual).

1.6 INTERCHANGE UNIT INSTALLATION

1.6.1 COMPONENT CHECK

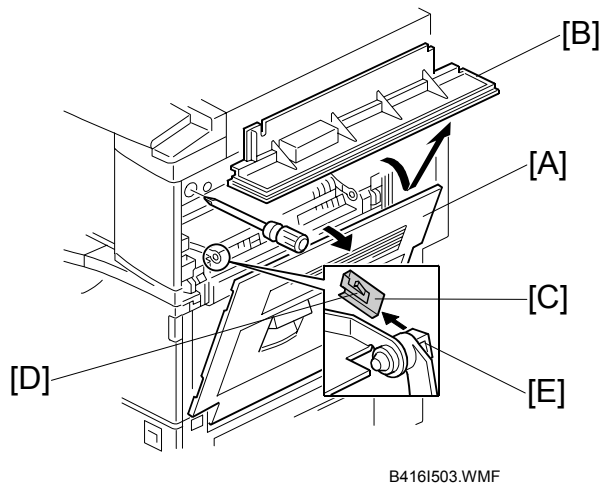
Check the quantity and condition of the components against the following list.

Description	Q'ty
1. Interchange Unit	1
2. Connector Cover.....	1
3. Tapping Screw M3 x 8	1

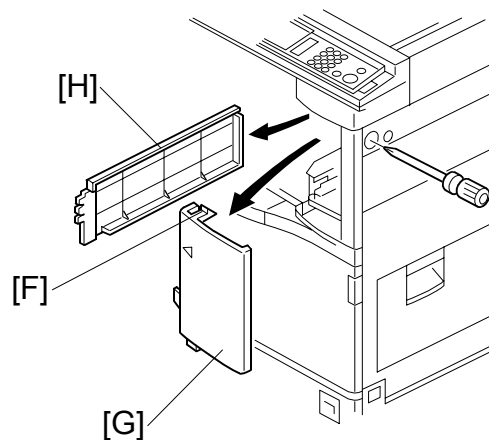


B416I101.WMF

1.6.2 INSTALLATION PROCEDURE



B416I503.WMF



B416I502.WMF

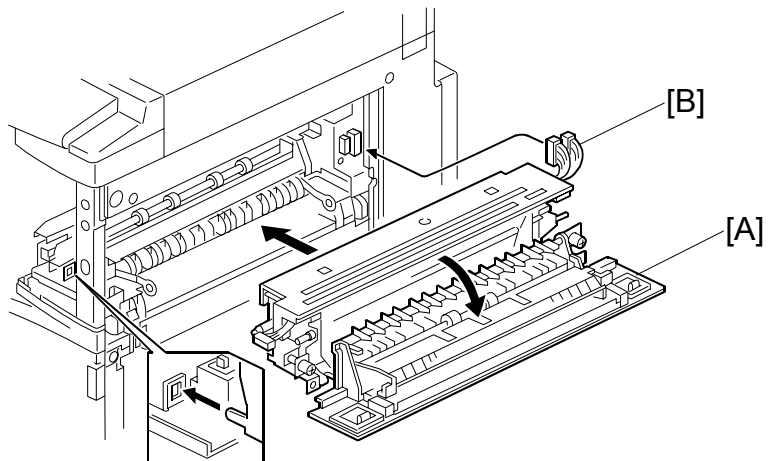
⚠ CAUTION

Unplug the copier power cord before starting the following procedure.

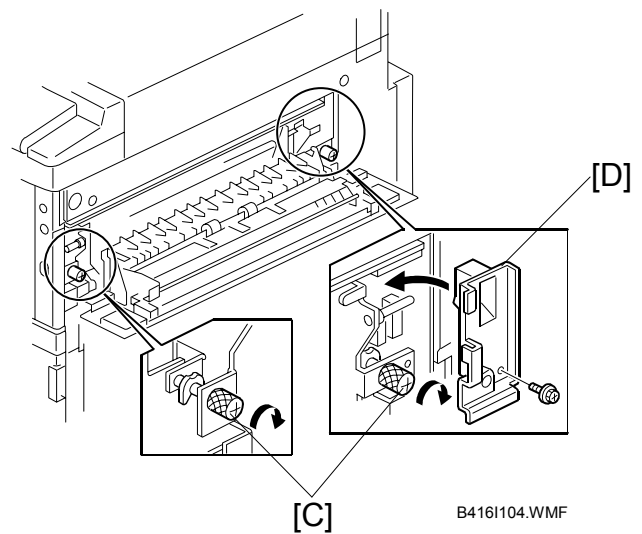
1. Remove all tapes.
2. Open the right cover [A] of the copier.
3. Open cover [B]
4. Remove the metal clip [C].
NOTE: To remove the clip, push the small tab [D] on the clip into the slot [E], then the clip can be removed.
5. Remove the cover [B].

If the optional 1-bin tray unit (B413) will be installed, do steps 6 and 7.

6. Loosen the screw, push down tab [F] with a screwdriver, and remove the front right cover [G].
7. Slide out the exit cover [H].



B416I103.WMF



B416I104.WMF

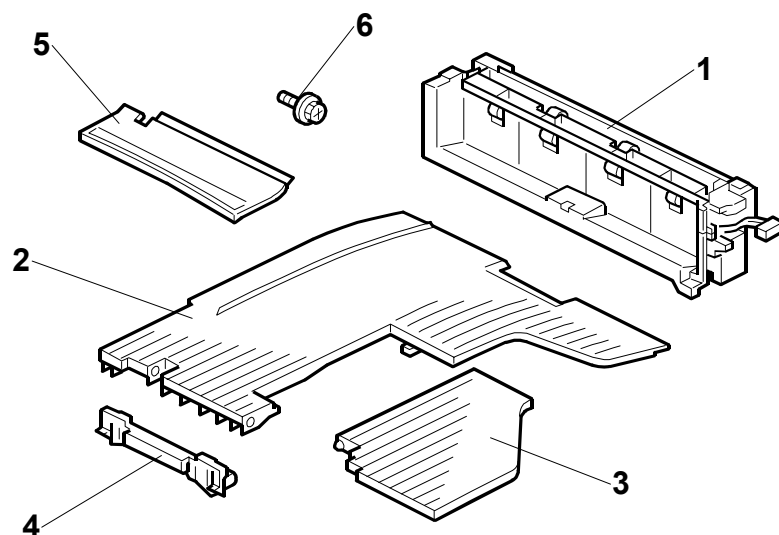
8. Open the cover [A] of the interchange unit.
9. Install the interchange unit (2 connectors) [B].
10. Secure the interchange unit with the knob screws [C].
11. Attach the connector cover [D] (1 x 1).

1.7 1-BIN TRAY UNIT INSTALLATION

1.7.1 COMPONENT CHECK

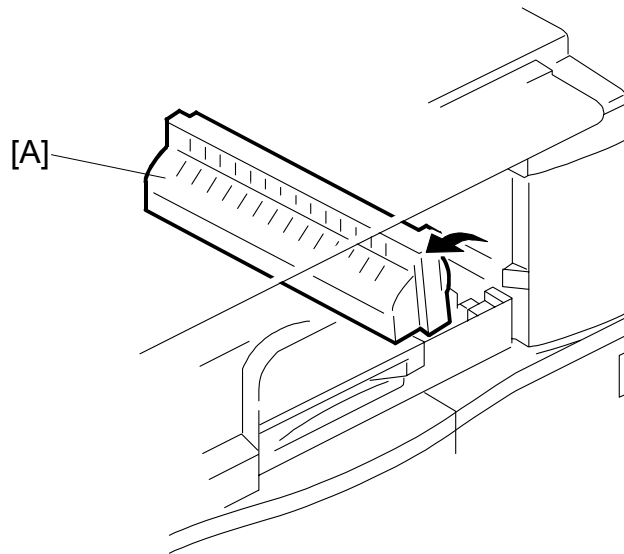
Check the quantity and condition of the components against the following list.

Description	Q'ty
1. 1-Bin Tray Unit.....	1
2. Tray	1
3. Sub-Tray.....	1
4. Tray Guide.....	1
5. Paper Guide	1
6. Tapping Screw M3 x 8.....	1



B4131101.WMF

1.7.2 INSTALLATION PROCEDURE

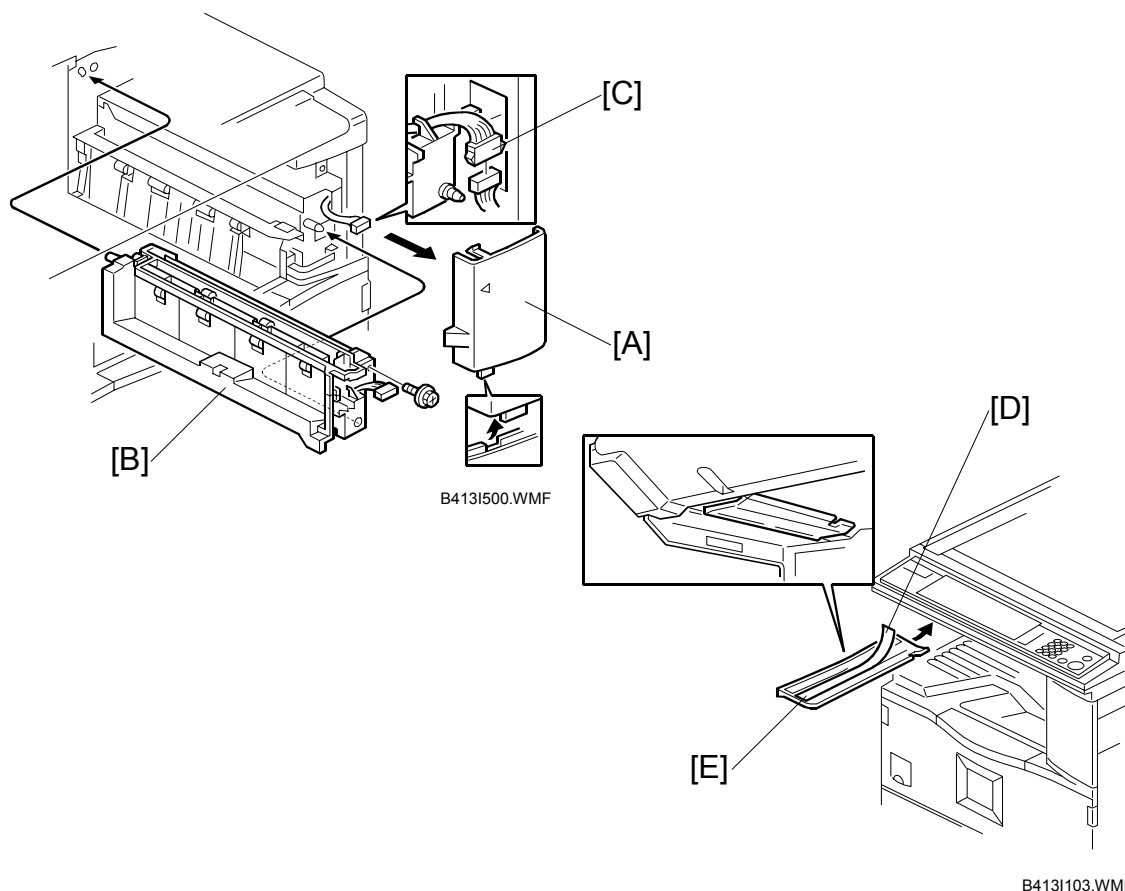


B413I501.WMF

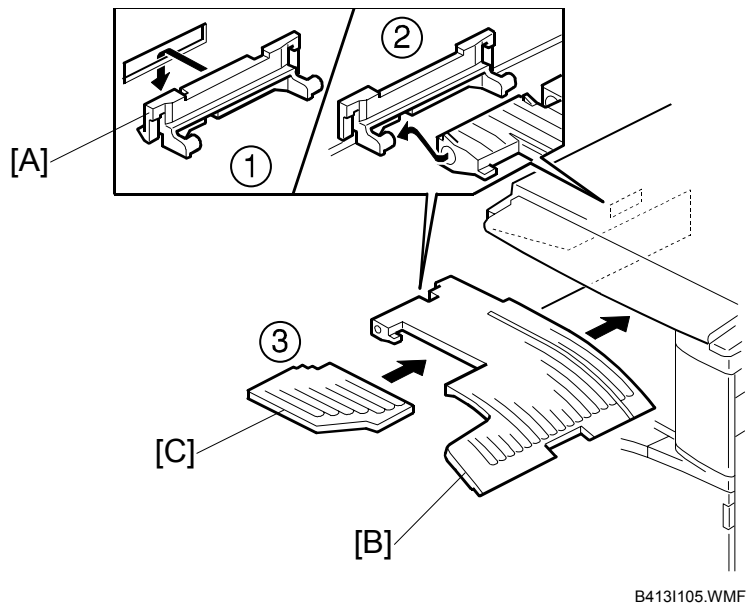
⚠ CAUTION**Unplug the copier power cord before starting the following procedure.**

NOTE: Before installing this 1-bin tray unit, the optional interchange unit (B416) must be installed.

1. Remove all tapes.
2. If the optional bridge unit has been installed, open the right jam removal cover [A] of the bridge unit.
If the optional bridge unit is not installed, skip this step.



3. If the front right cover [A] is installed, remove it.
4. Install the 1-bin tray unit [B] (1 x 1).
5. Connect the connector [C].
6. Reinstall the front right cover.
7. Peel off the backing [D] of the double-sided tape attached to the paper guide [E]. Then attach the paper guide to the underside of the scanner unit as shown.



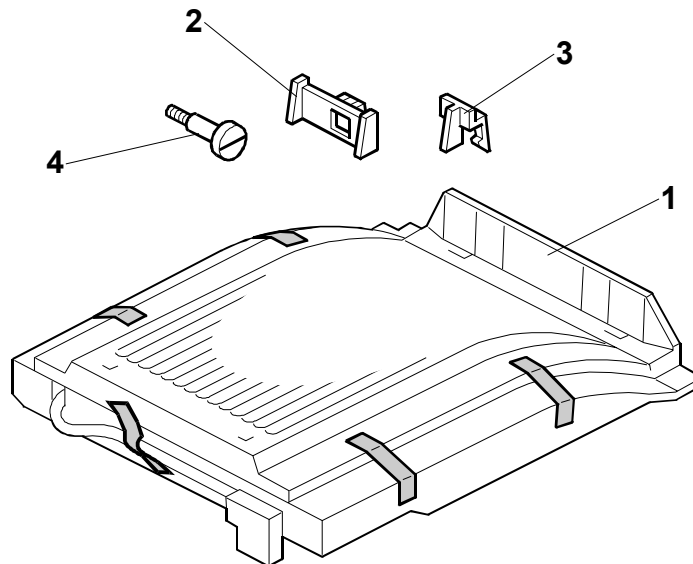
8. Install the tray guide [A].
9. Install the tray [B].
10. Install the sub-tray [C].
11. Turn on the main power switch and check the 1-bin tray unit operation.

1.8 SHIFT TRAY

1.8.1 COMPONENT CHECK

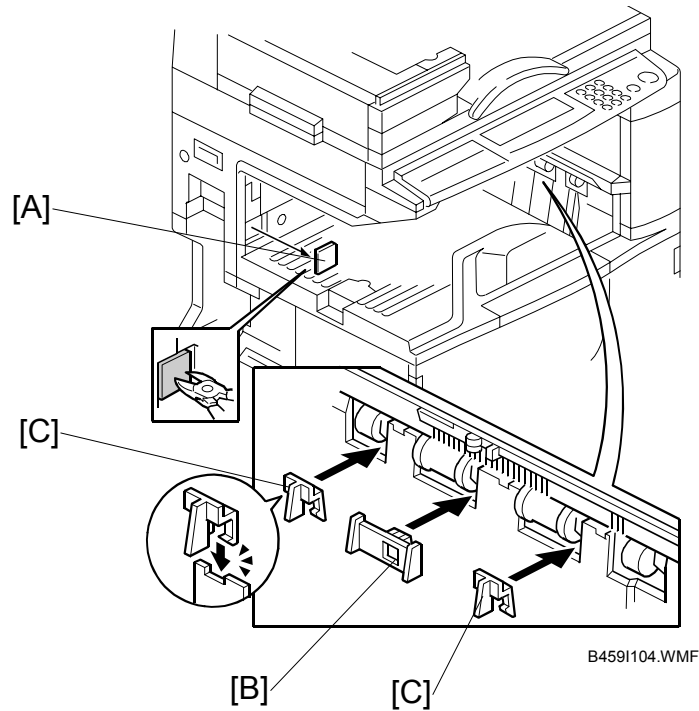
Check the quantity and condition of the components against the following list.

Description	Q'ty
1. Shift Tray Unit.....	1
2. Paper Guide - Large	1
3. Paper Guide - Small	2
4. Stepped Screw	1



B459I101.WMF

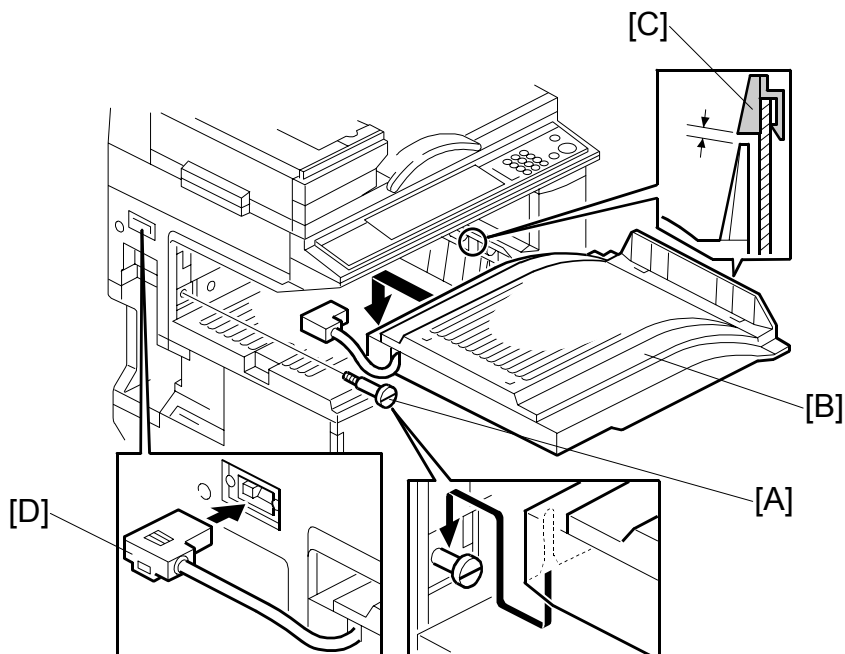
1.8.2 INSTALLATION PROCEDURE



⚠ CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove all tapes.
2. Remove the plate [A].
3. Install the large paper guide [B] and two small paper guides [C], as shown.



B459I103.WMF

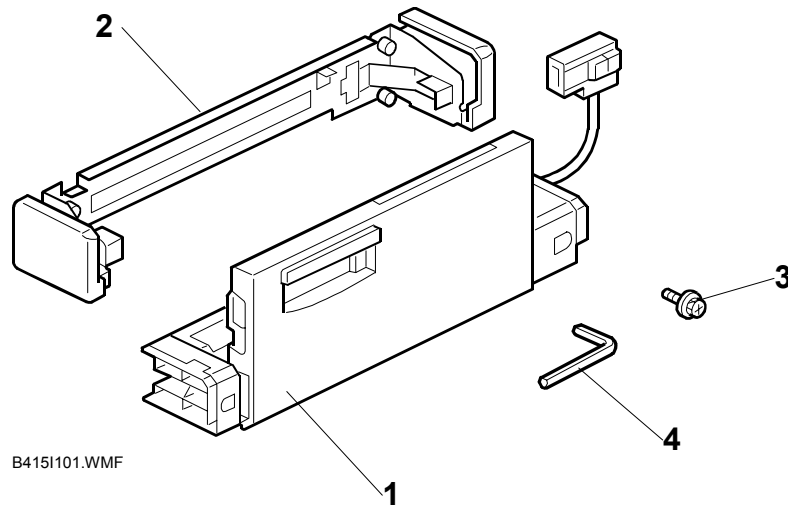
4. Install the stepped screw [A].
5. Install the shift tray unit [B], as shown.
NOTE: 1) Set the shift tray on the stepped screw.
2) The shift tray must be installed under the paper guide [C] installed in step 3.
6. Connect the cable [D] to the copier.
7. Turn on the main power switch.
8. Check the shift tray operation.

1.9 BY-PASS FEED UNIT INSTALLATION

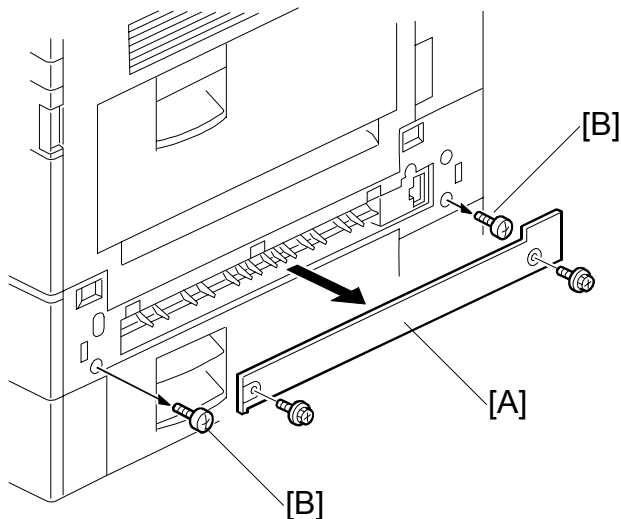
1.9.1 COMPONENTS CHECK

Check the quantity and condition of the components against the following list.

Description	Q'ty
1. By-pass Tray Unit	1
2. Unit Holder.....	1
3. Tapping Screw	2
4. Allen Key	1



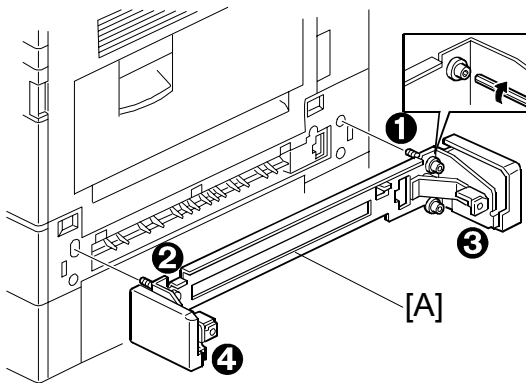
1.9.2 INSTALLATION PROCEDURE



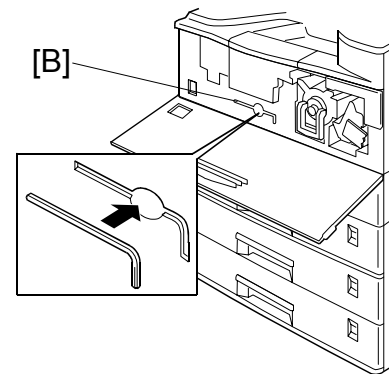
B415I500.WMF

⚠ CAUTION**Unplug the copier power cord before starting the following procedure.**

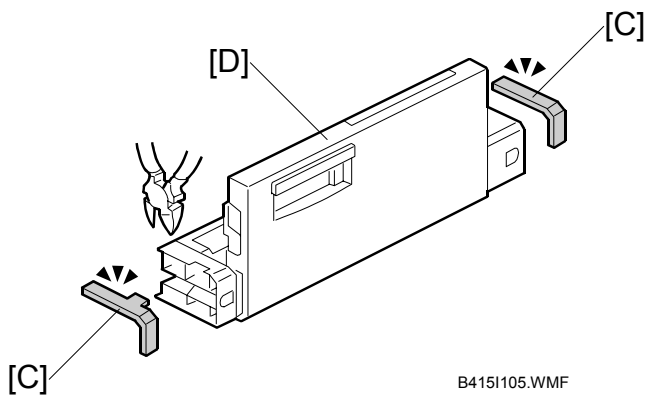
1. Remove all tapes.
2. Remove the entrance cover [A] (⚙ x 2) and two screws [B].



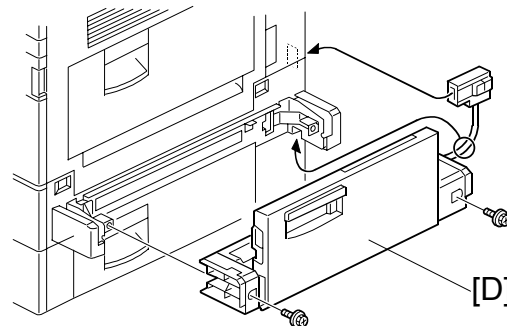
B415I501.WMF



B415I502.WMF



B415I105.WMF



B415I104.WMF

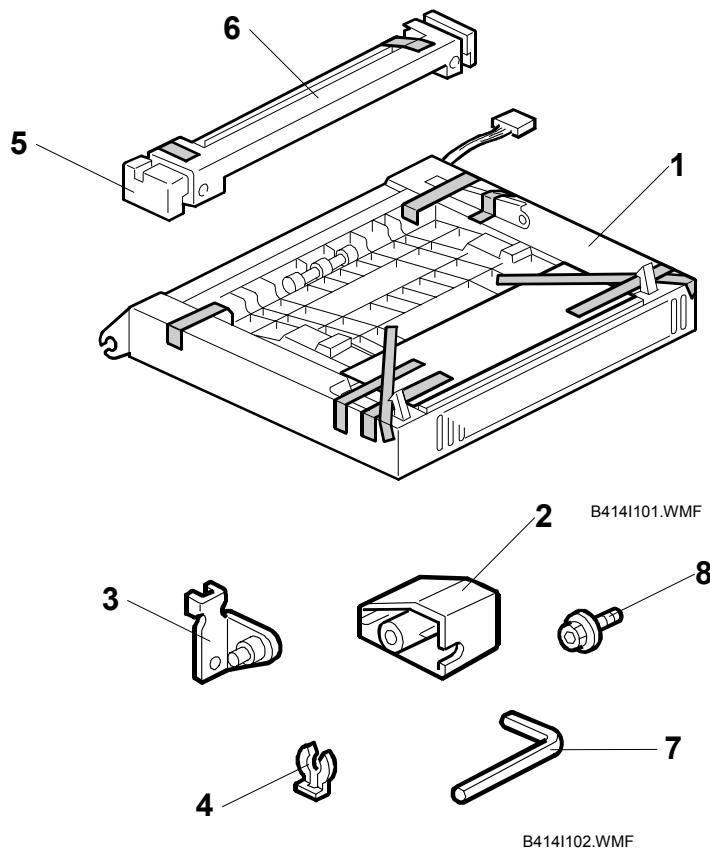
3. Install the unit holder [A] using the Allen key (⌘ x 4).
NOTE: 1) Make sure that the four screws are tightened in the proper order, as shown above. Otherwise, when the optional duplex unit (B414) is installed, it will not properly lock in place.
 2) After securing the unit, store the Allen key in the inner cover [B] for future use.
4. **If the optional duplex unit (B414) will be installed:** Remove the indicated parts [C] of the by-pass tray unit [D].
5. Install the by-pass tray unit (⌘ x 2, ⌘ x 1).
6. Turn the main power switch on and check the by-pass tray function.
7. Make a copy from the by-pass tray. Then check the registration.

1.10 DUPLEX UNIT INSTALLATION

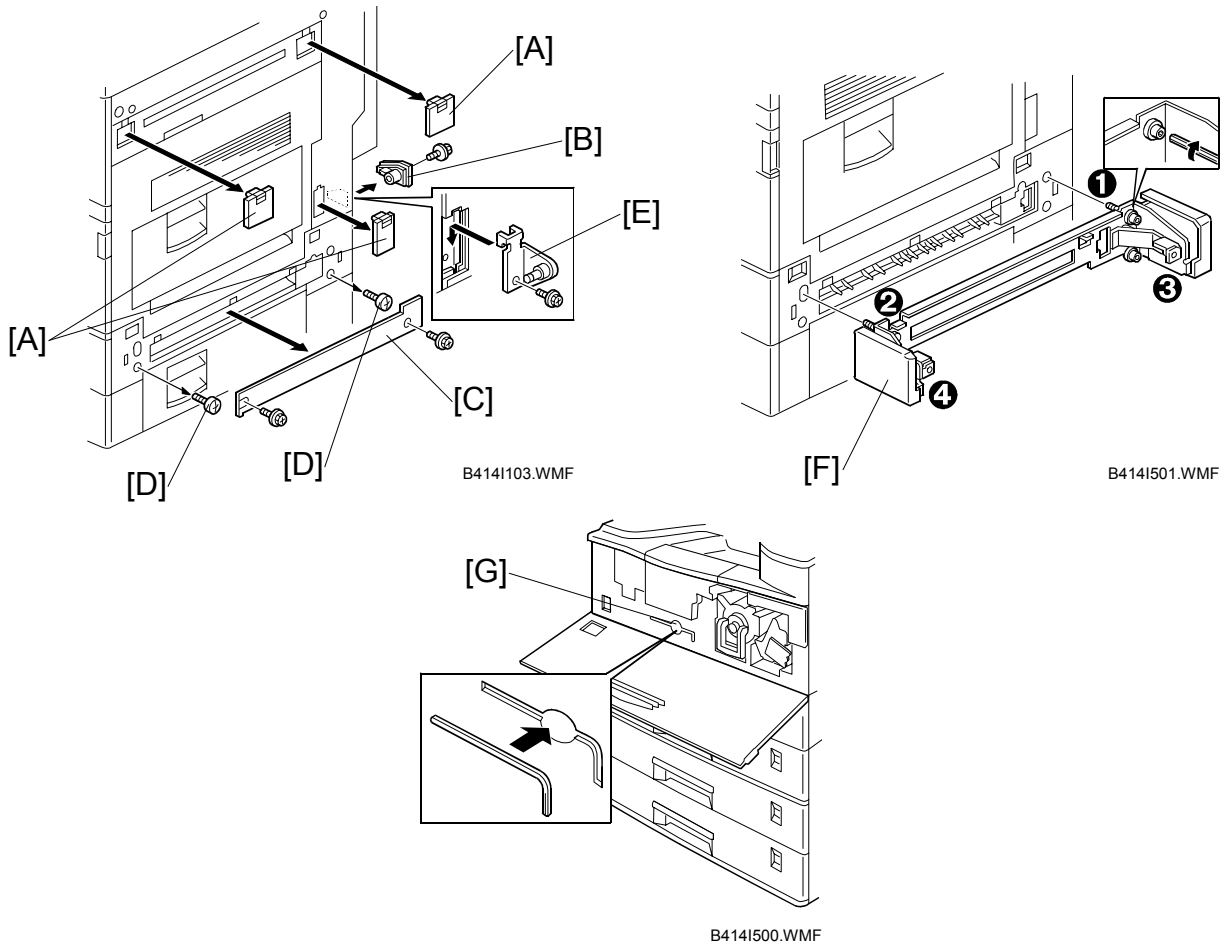
1.10.1 ACCESSORY CHECK

Check the quantity and condition of the accessories against the following list.

Description	Q'ty
1. Duplex Unit	1
2. Connector Cover.....	1
3. Bracket	1
4. Clip	1
5. Unit Holder.....	1
6. Unit Holder Cover	1
7. Allen Key	1
8. Tapping Screw - M3 x 8	4



1.10.2 INSTALLATION PROCEDURE



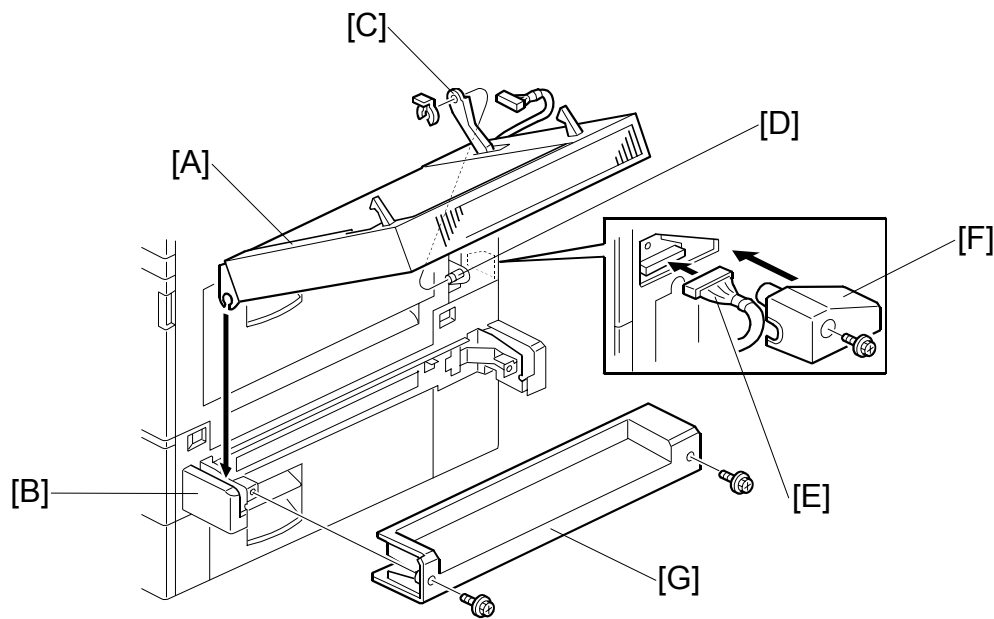
⚠ CAUTION

Unplug the copier power cord before starting the following procedure.

NOTE: Before installing the duplex unit, the optional interchange unit (B416) must be installed.

1. Remove all tapes.
2. Remove three covers [A].
3. Remove the connector cover [B] (⚙ x 1), the entrance cover [C] (2 screws if the by-pass tray has not been installed), and two screws [D].
4. Install the bracket [E] (⚙ x 1).
5. **If the by-pass tray has already been installed, skip this step:** Install the unit holder [F] using the Allen key (⚙ x 4).

NOTE: 1) Make sure that the four screws are tightened in the proper order, as shown above. Otherwise, the duplex unit will not properly lock in place.
2) After securing the unit, store the Allen key in the inner cover [G] for future use.



B414I104.WMF

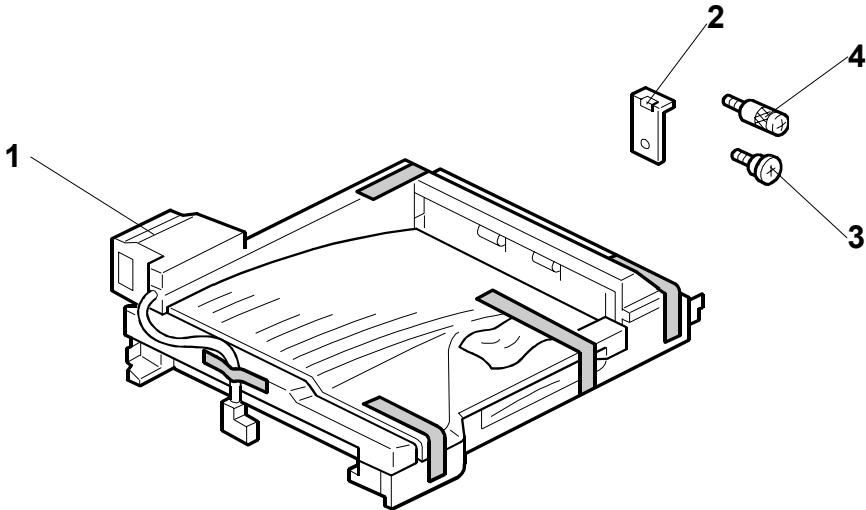
6. Set the duplex unit [A] on the unit holder [B] or on the by-pass tray unit if it has already been installed.
7. Attach the link [C] to the shaft [D] and secure it with the clip.
8. Connect the cable [E] and install the connector cover [F] (⚙ x 1).
9. **If the by-pass tray has already been installed, skip this step:** Install the unit holder cover [G] (⚙ x 2).
10. Turn on the main power switch and check the duplex unit function.

1.11 BRIDGE UNIT INSTALLATION

1.11.1 ACCESSORY CHECK

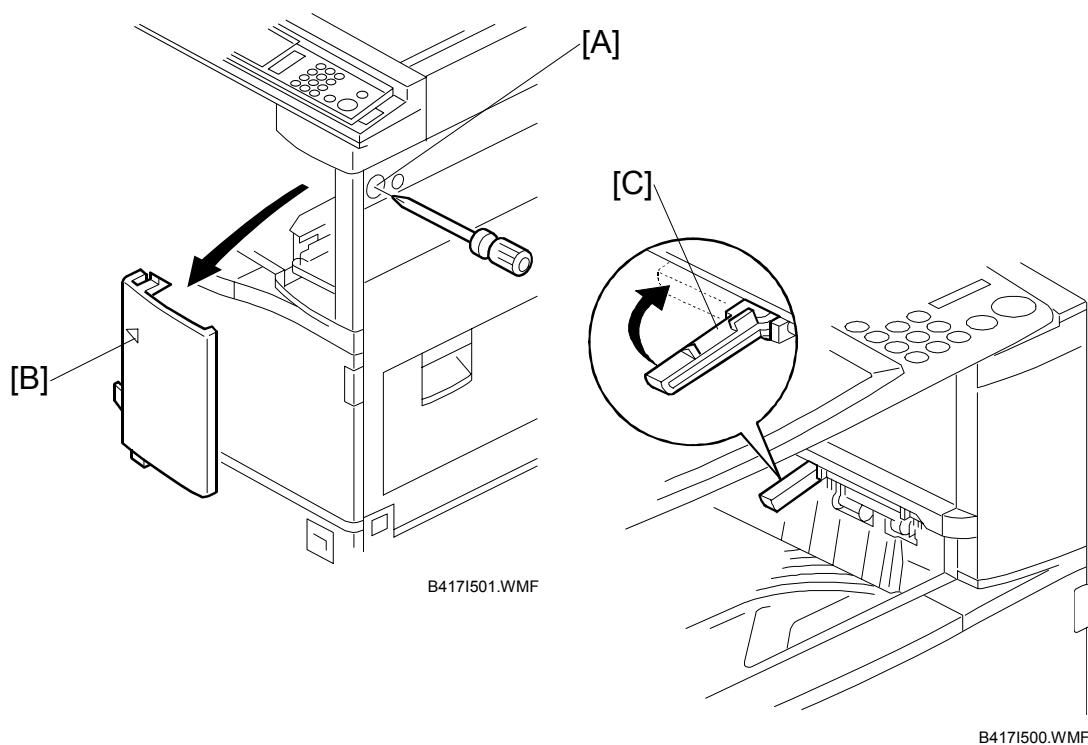
Check the quantity and condition of the accessories against the following list.

Description	Q'ty
1. Bridge Unit.....	1
2. Securing Plate	1
3. Shoulder Screw	1
4. Knob Screw	1



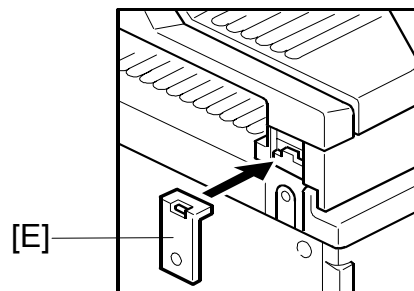
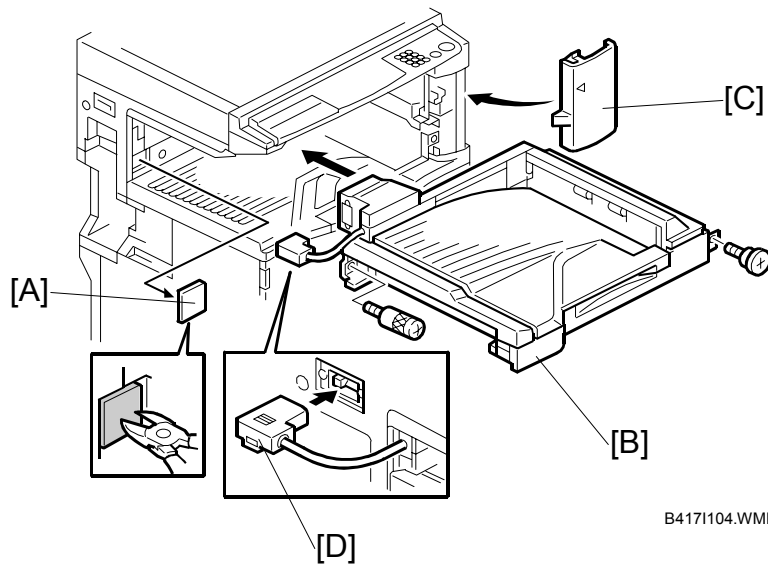
B4171101.WMF

1.11.2 INSTALLATION PROCEDURE

**⚠ CAUTION**

Unplug the copier power cord before starting the following procedure.

1. Remove all tapes.
2. Loosen the screw [A] and remove the front right cover [B].
3. If the sensor feeler [C] is out, fold it away into the machine.

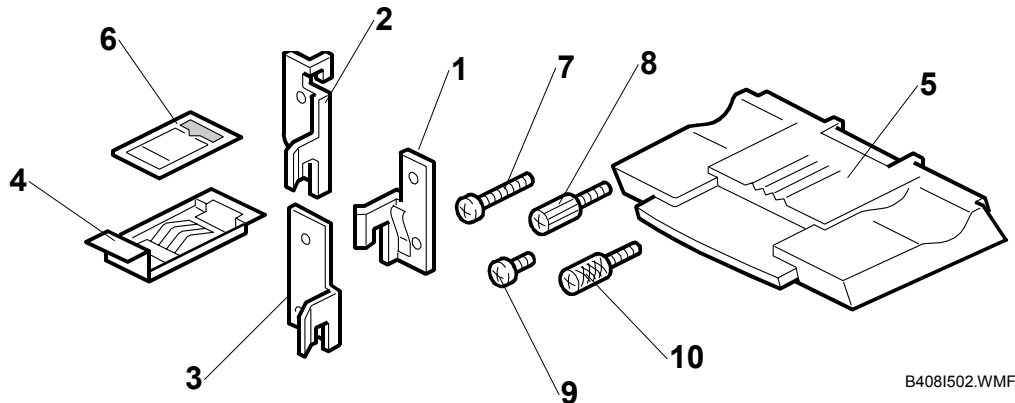


4. Remove the cover [A].
5. Install the bridge unit [B] (⌀ x 1 shoulder, ⌀ x 1 knob).
6. Reinstall the front right cover [C].
7. Connect the cable [D] to the main machine.
8. Attach the securing plate [E], as shown.
NOTE: Do not attach it with a screw; this is done when securing the front stand for the optional finisher.
9. Install the optional finisher (refer to the finisher installation procedure).

1.12 1000-SHEET FINISHER INSTALLATION

1.12.1 ACCESSORY CHECK

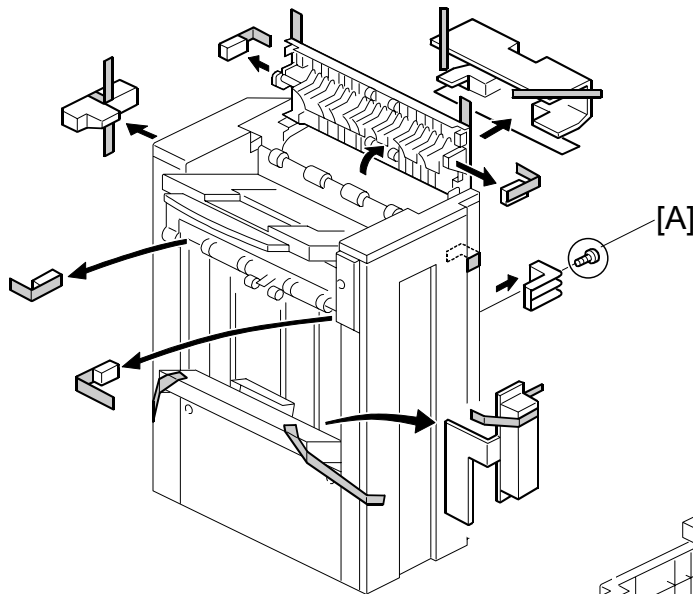
Check the quantity and condition of the accessories against the following list.



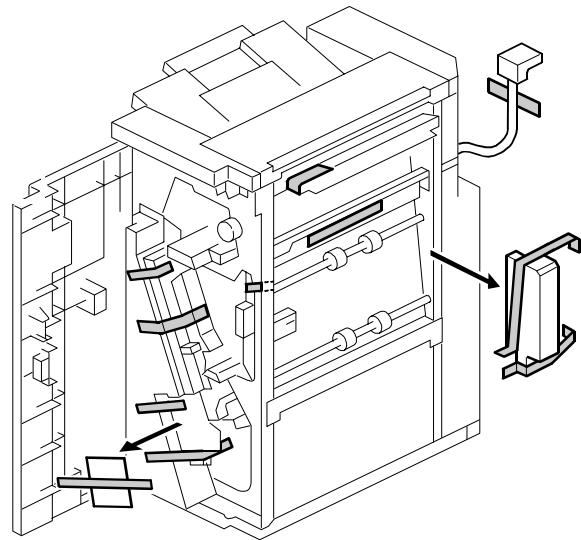
No.	Description	Q'ty	For B022/B027/B031/ B089/B093/B097/ B205/B209	For B051/B052/ B156/B220	For B079/B082/ B135/B138
1	Front Joint Bracket	1	✓	---	✓
2	Rear Joint Bracket	1	✓	---	---
3	Rear Joint Bracket	1	---	---	✓
4	Grounding Plate	1	✓	---	✓
5	Copy Tray	1	✓	✓	✓
6	Staple Position Decal	1	✓	✓	✓
7	Screw - M4 x 14	4	✓ (Use 3)	---	✓ (Use 4)
8	Knob Screw - M4 x 10	1	✓	✓	✓
9	Screw - M3 x 8	1	✓	---	✓
10	Knob Screw - M3 x 8	1	✓	✓	✓

✓ = Necessary, --- = Not necessary

1.12.2 INSTALLATION PROCEDURE



B4081102.WMF



B4081103.WMF

CAUTION

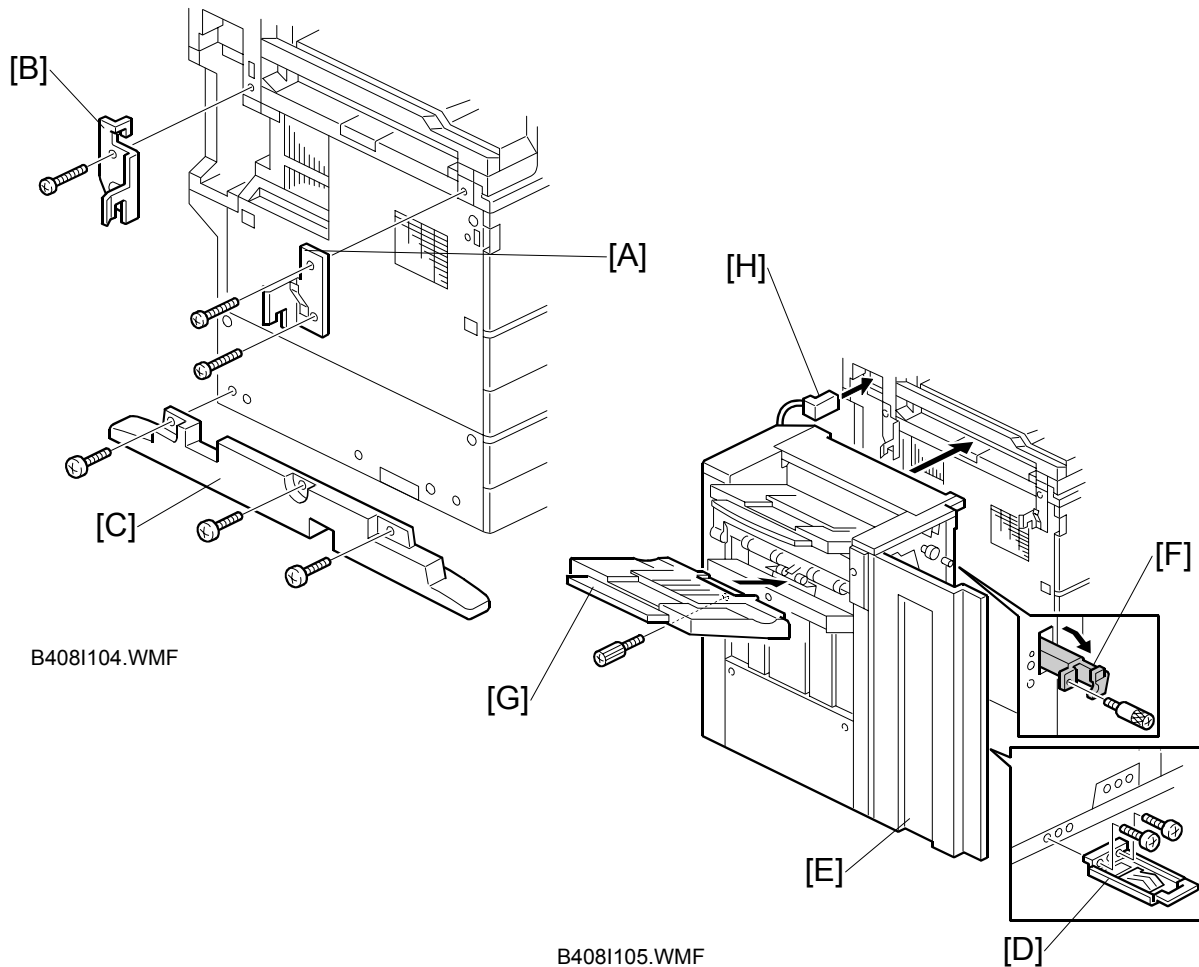
Unplug the main machine power cord before starting the following procedure.

The following options must be installed before you install this finisher:

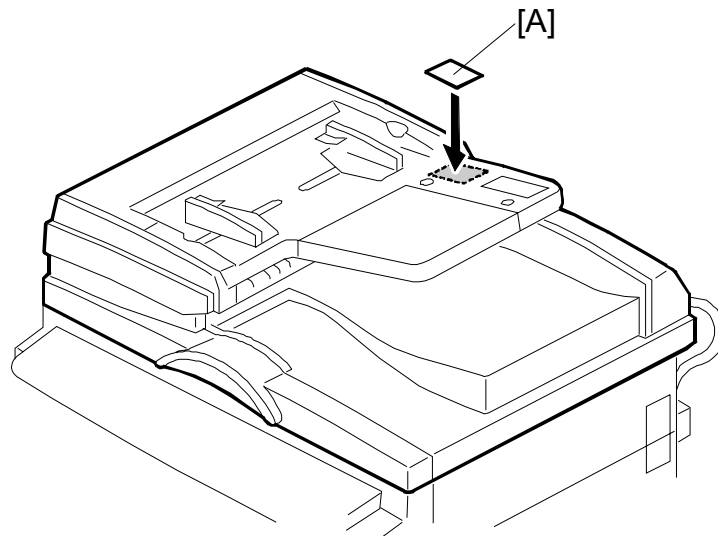
- Bridge Unit (B417)
- Paper Tray Unit (B390) or LCT (B391)

1. Unpack the finisher and remove the tapes.

NOTE: Be sure to keep screw [A]. It will be needed to secure the grounding plate in step 4.



2. Install the front joint bracket [A] (⌘ x 2 M4 x 17) and rear joint bracket [B] (⌘ x 1 M4 x 17).
3. Remove the left stand [C] (⌘ x 3)
4. Install the lower grounding plate [D] on the finisher (⌘ x 2 M3 x 8).
NOTE: Use the screw removed in step 1 and the screw from the accessory box.
5. Open the front door [E]. Then pull the locking lever [F].
6. Align the finisher on the joint brackets, and lock it in place by pushing the locking lever.
7. Secure the locking lever (⌘ x 1 knob M3 x 8) and close the front door.
8. Install the copy tray [G] (⌘ x 1 knob M4 x 10).
9. Connect the finisher cable [H] to the main machine.



B408I501.WMF

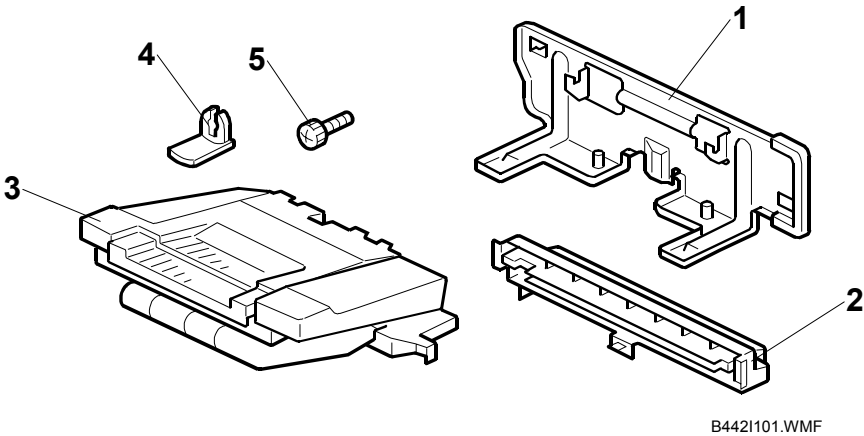
10. Attach the staple position decal [A] to the ARDF as shown.
11. Turn on the ac switch and check the finisher operation.

1.13 500-SHEET FINISHER (B442) INSTALLATION

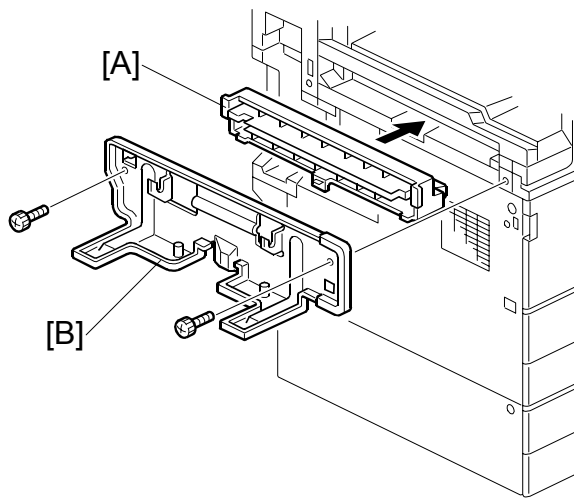
1.13.1 ACCESSORY CHECK

Check the quantity and condition of the accessories against the following list.

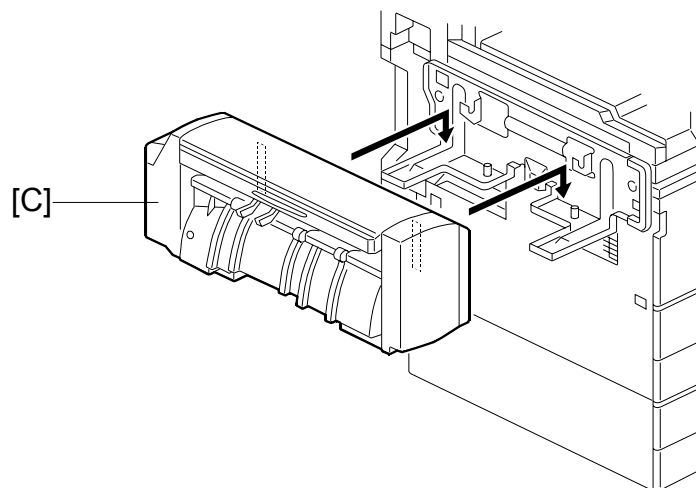
Description	Q'ty
1. Unit Holder.....	1
2. Entrance Guide.....	1
3. Output Tray.....	1
4. Snap Ring.....	2
5. Knob Screw	2



1.13.2 INSTALLATION PROCEDURE



B4421103.WMF



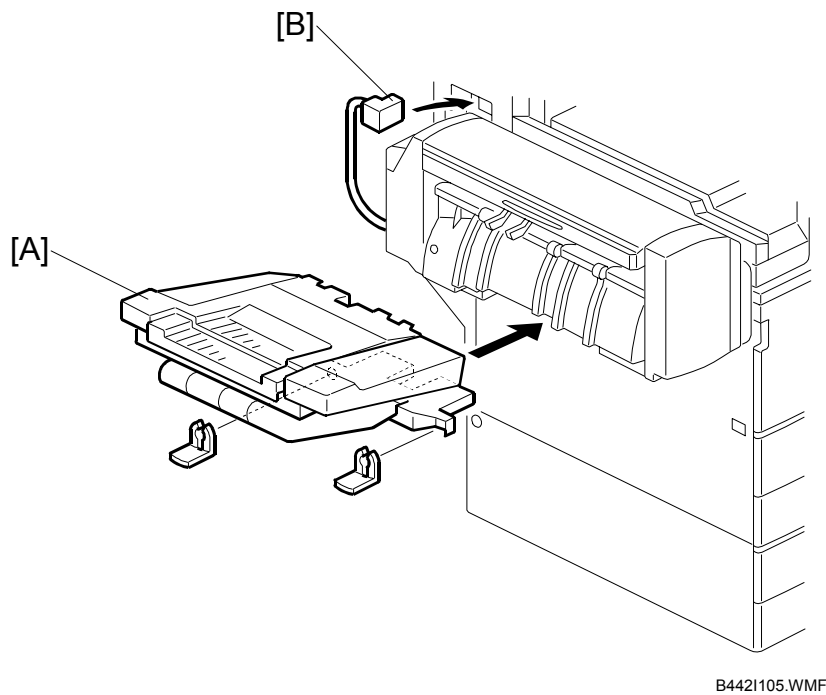
B4421104.WMF

⚠ CAUTION

Unplug the main machine power cord before starting the following procedure.

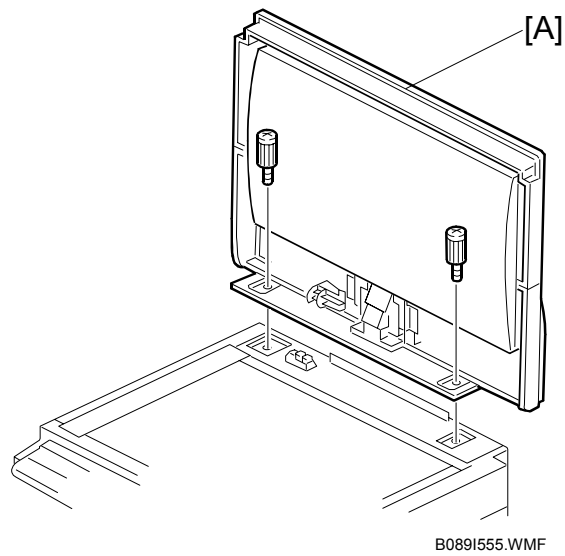
NOTE: Before installing the 500-sheet finisher, the optional bridge unit (B417) must be installed.

1. Unpack the finisher and remove the tapes.
2. Install the entrance guide [A].
3. Install the unit holder [B] (⌀ x 2).
4. Install the 500-sheet finisher [C].



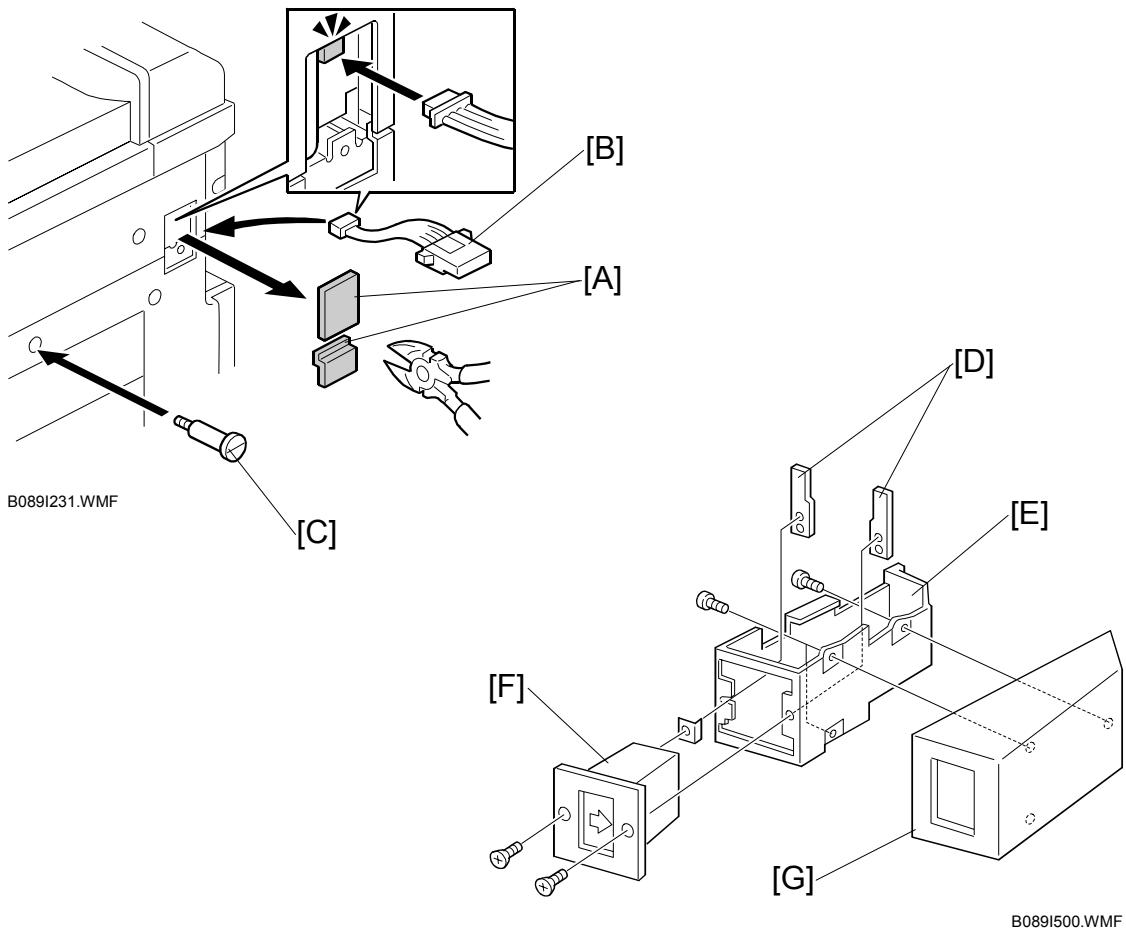
5. Install the output tray [A] as shown (2 snap rings).
6. Connect the finisher cable [B].
7. Turn on the main power switch and check the finisher operation.

1.14 PLATEN COVER (B406)



1. Install the platen cover [A] (⌀ x 2).

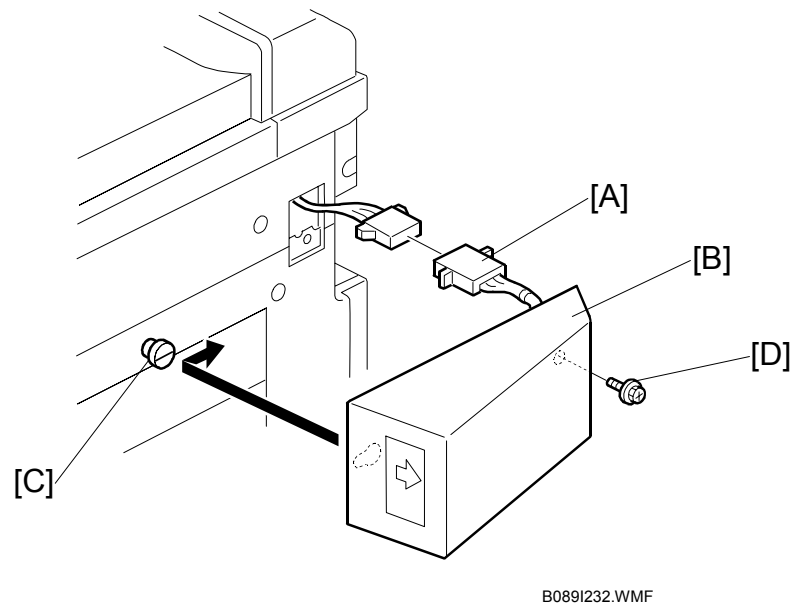
1.15 KEY COUNTER



⚠ CAUTION

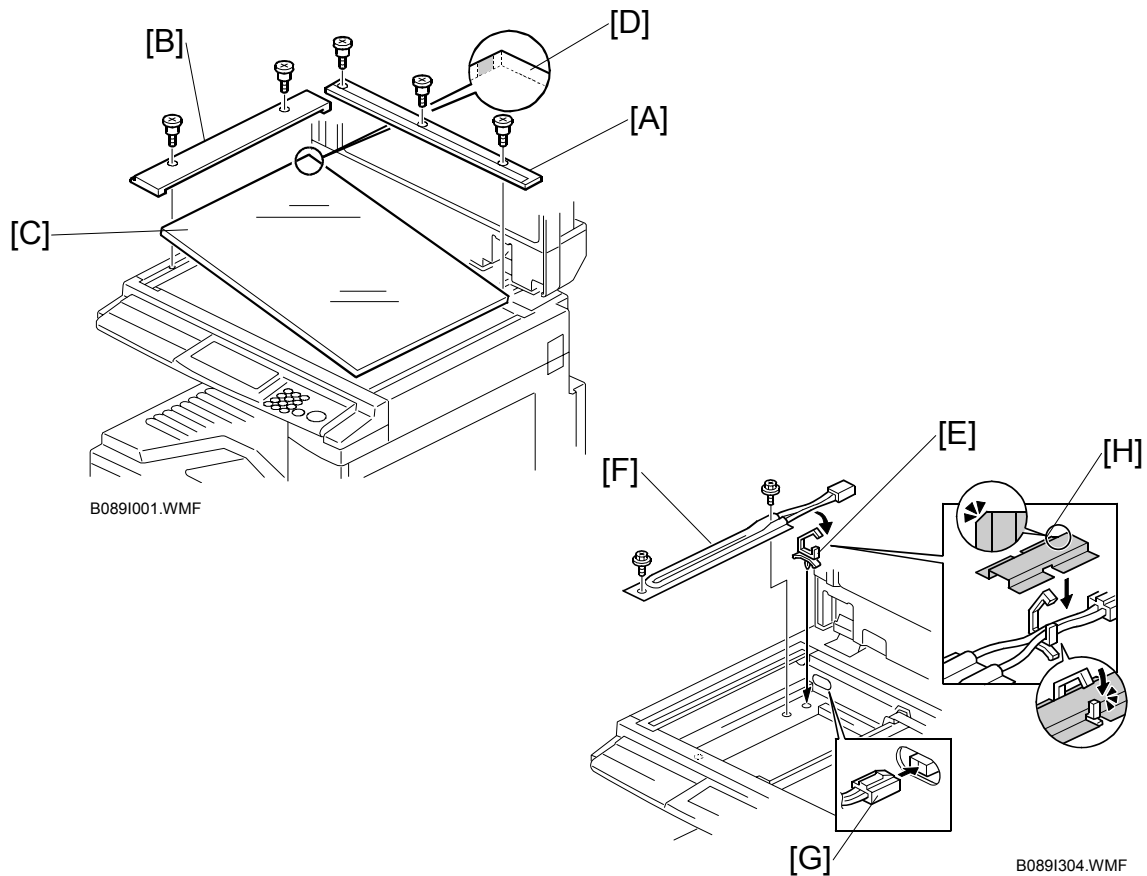
Unplug the machine power cord before starting the following procedure.

1. Remove two caps [A].
2. Connect the key counter cable [B].
3. Install the stepped screw [C].
4. Hold the key counter plate nuts [D] on the inside of the key counter bracket [E] and insert the key counter holder [F].
5. Secure the key counter holder to the bracket (⚙ x 2).
6. Install the key counter cover [G] (⚙ x 2).



7. Connect the cable [A].
8. Hook the key counter holder assembly [B] onto the stepped screw [C].
9. Secure the key counter holder assembly with a screw [D].
10. Use the User Tools to enable the counter function for the following modes:
 - Copy mode
 - Document server mode
 - Fax mode
 - Scanner mode
 - Printer mode

1.16 OPTICS ANTI-CONDENSATION HEATER

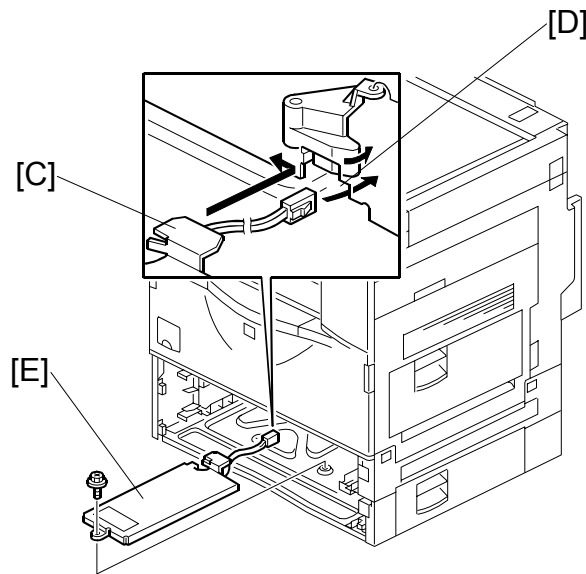
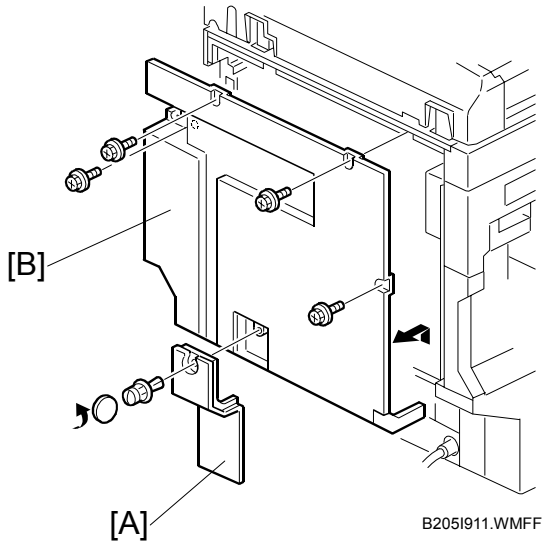


⚠ CAUTION

Unplug the machine power cord before starting the following procedure.

1. Remove the rear scale [A] (⌀ x 3), left scale [B] (⌀ x 2), and exposure glass [C].
NOTE: When reinstalling the exposure glass, make sure that the mark [D] is positioned at the rear left corner, as shown.
2. Move the 1st and 2nd scanners to the right.
3. Install the cable clamp [E].
4. Install the anti-condensation heater [F] (⌀ x 2).
5. Join the connectors [G].
6. Attach the cable cover [H], as shown.

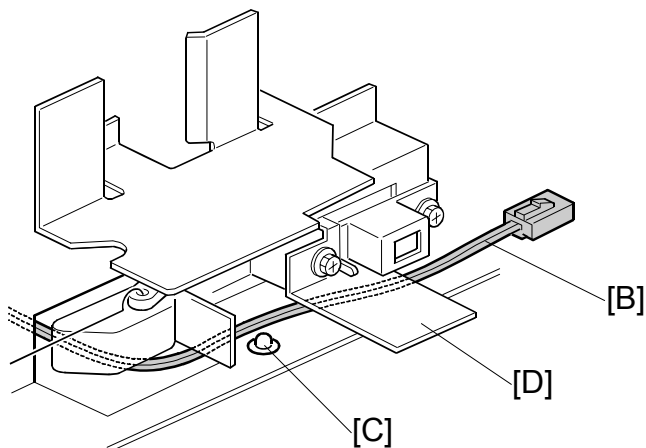
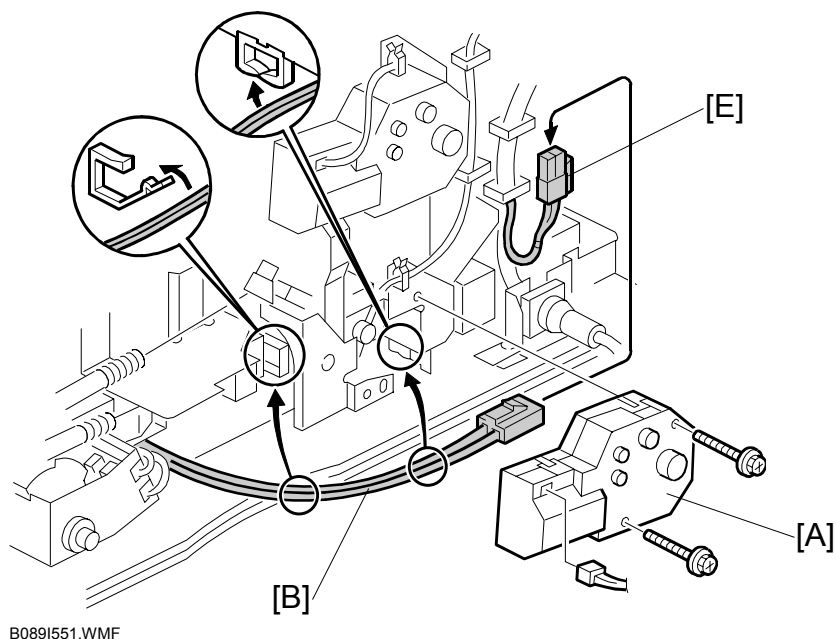
1.17 TRAY HEATER



⚠ CAUTION

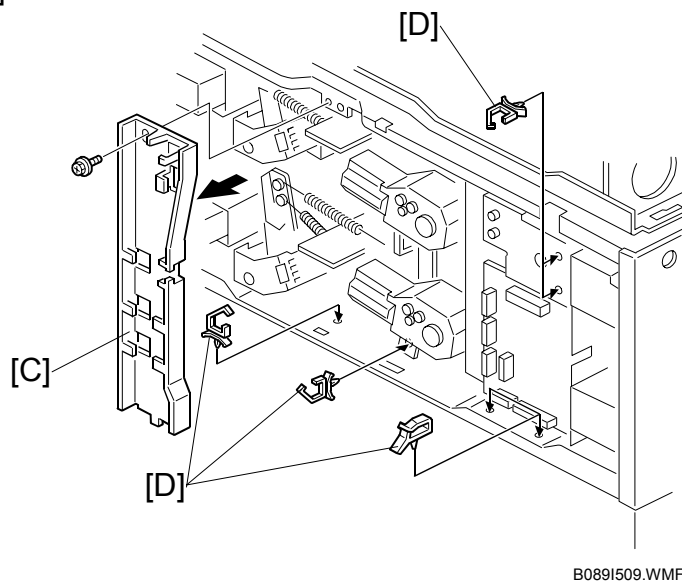
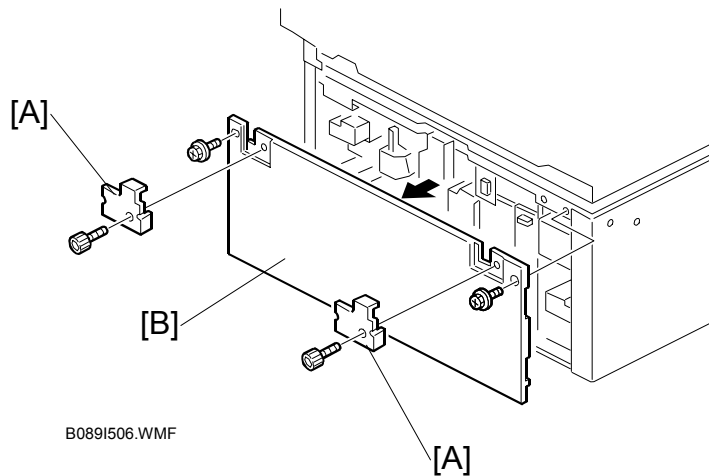
Unplug the machine power cord before starting the following procedure.

1. Remove the connector cover [A] and rear cover [B] (⚙ x 4).
2. Slide out the 1st and 2nd paper trays.
3. Pass the connector [C] through the opening [D].
4. Install the tray heater assembly [E] (⚙ x 1).



5. Remove the 2nd paper lift motor [A] (⌀ x 2, ⌀ x 1).
6. Route the heater cable [B] to the side of rivet [C] and under bracket [D].
7. Clamp the heater cable [B] as shown.
8. Joint the heater cable and the ac cable [E].
9. Reinstall the paper lift motor [A] and reassemble the machine.

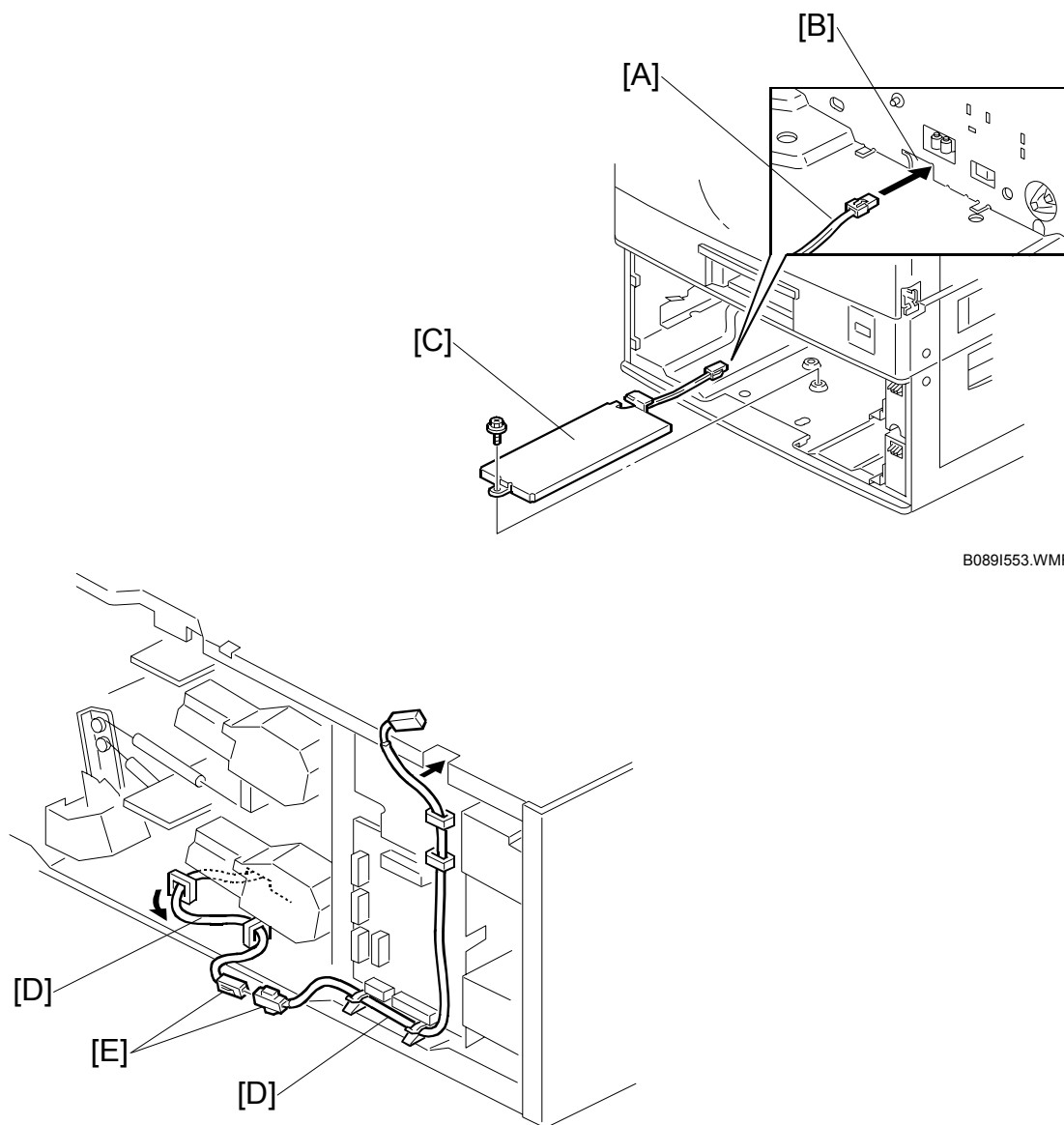
1.18 TRAY HEATER (OPTIONAL PAPER TRAY UNIT)



⚠ CAUTION

Unplug the machine power cord before starting the following procedure.

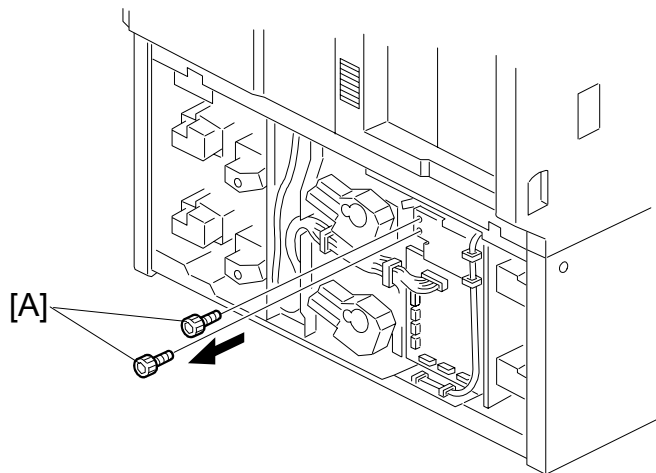
1. Remove the joint brackets [A] (⚙ x 1 each).
2. Remove the rear cover [B] for the optional paper tray unit (⚙ x 2).
3. Remove the cable guide [C] (⚙ x 1).
4. Install the clamps [D].



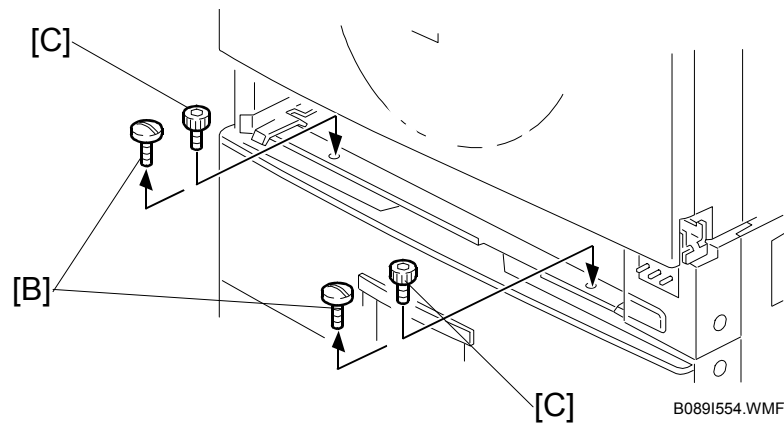
B089I553.WMF

B089I505.WMF

5. Slide out the two paper trays from the optional paper tray unit.
6. Pass the connector [A] through the opening [B].
7. Install the tray heater assembly [C] (⌀ x 1).
8. Clamp the cables [D], as shown.
9. Join the connectors [E].
10. Reinstall the cable guide.



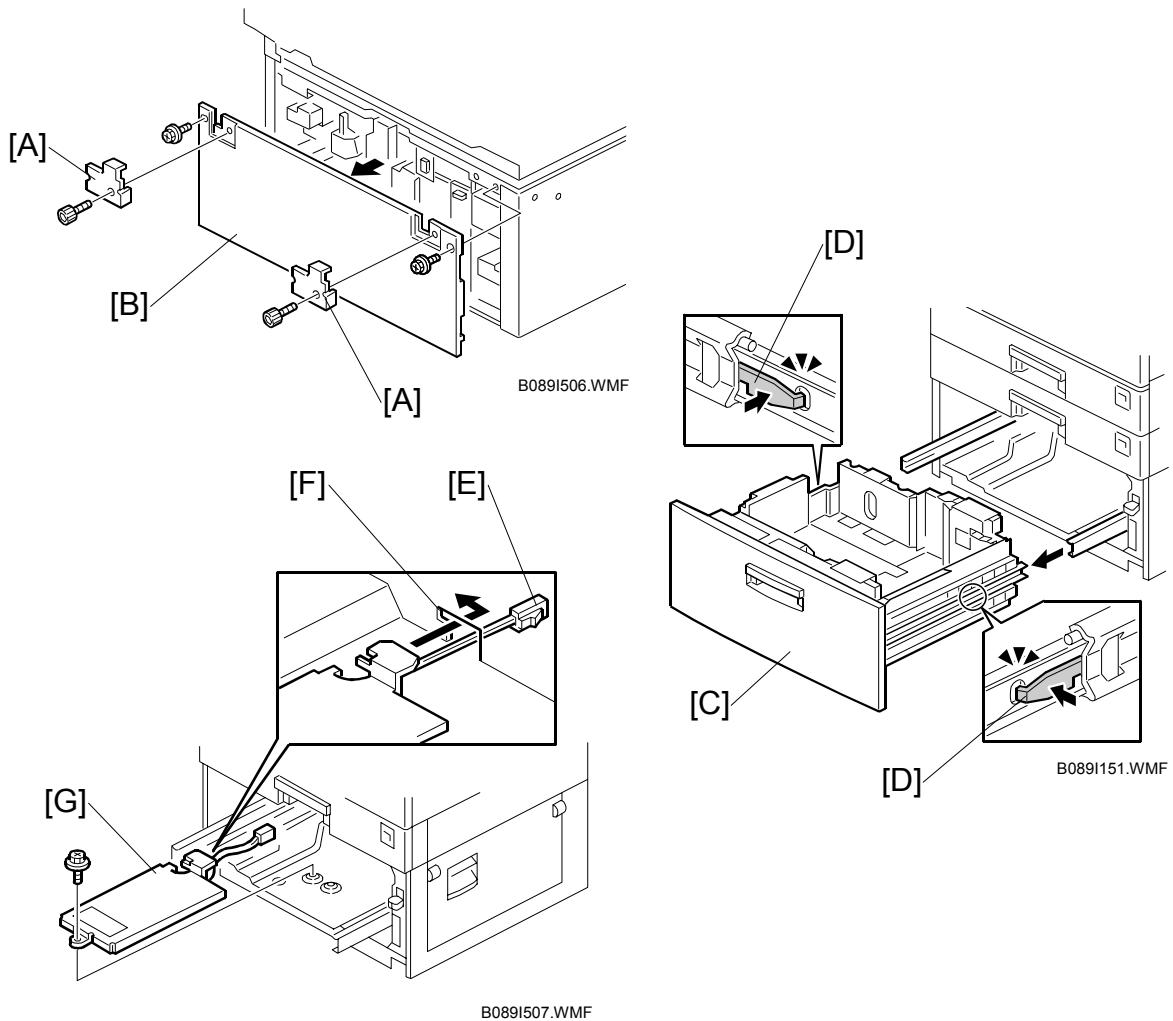
B089I508.WMF



B089I554.WMF

11. Remove two screws [A] from the rear side of the paper feed unit.
12. Reinstall the rear cover for the optional paper tray unit.
13. Reinstall the two paper trays into the optional paper tray unit.
14. Remove the 2nd paper tray of the copier.
15. Remove two screws [B] and install the screws [C] which were removed in step 12.
16. Reinstall the 2nd paper tray of the copier.

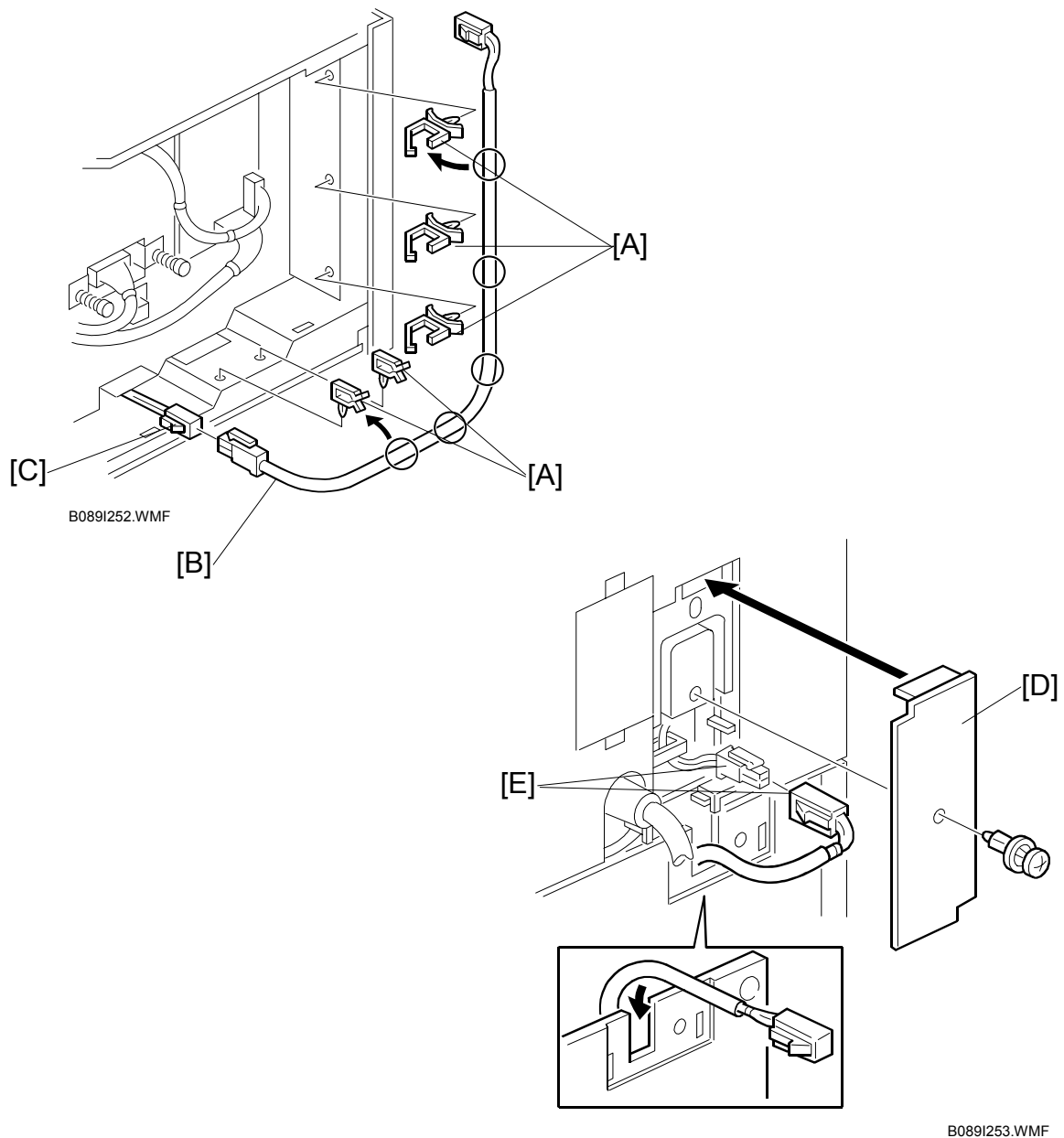
1.19 TRAY HEATER (OPTIONAL LCT)



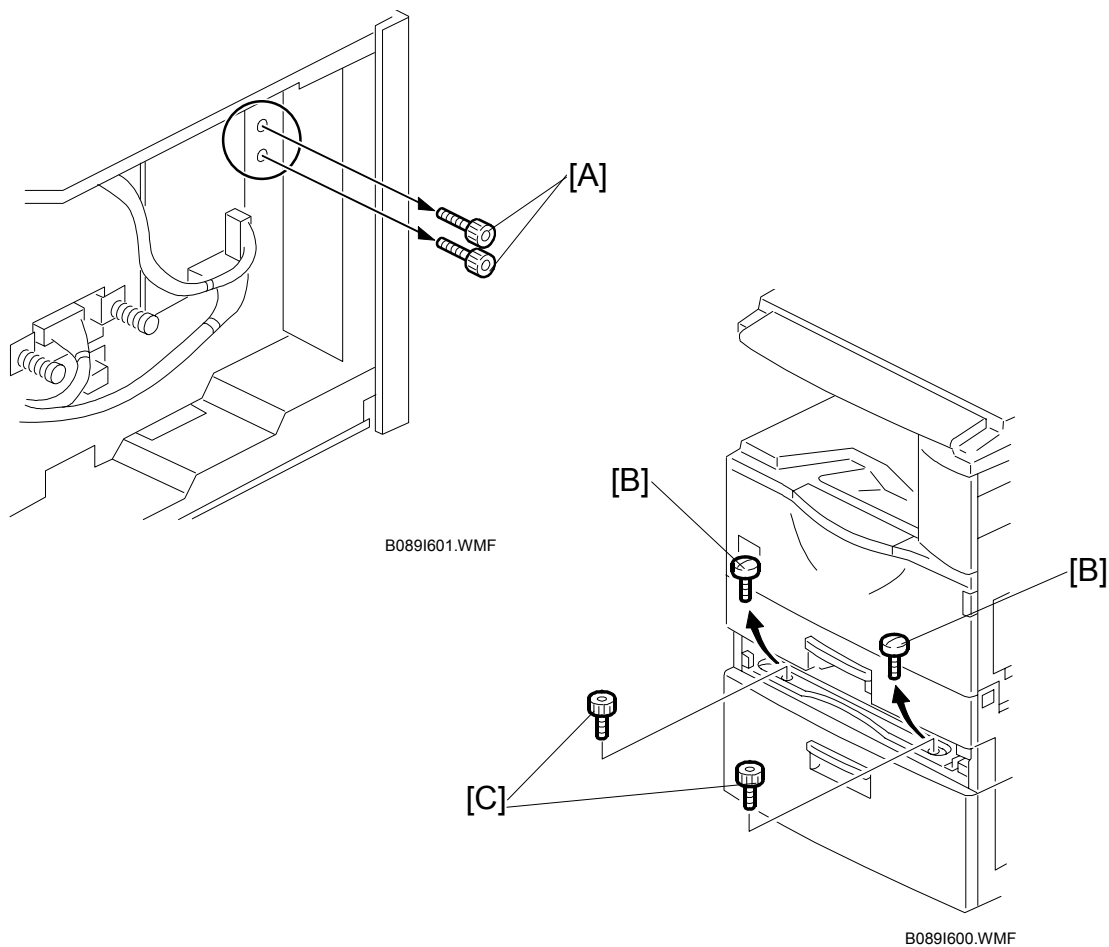
⚠ CAUTION

Unplug the machine power cord before starting the following procedure.

1. Remove two joint brackets [A] (⚙ x 1 each).
2. Remove the rear cover for the LCT [B] (⚙ x 2).
3. Slide out the paper tray [C].
4. Push the stopper [D] on both slide rails and remove the paper tray.
5. Pass the connector [E] through the opening [F].
6. Install the tray heater [G] (⚙ x 1).



7. Install five clamps [A].
8. Connect the cable [B] to the tray heater cable [C].
9. Route the cable and clamp it.
10. Remove the connector cover of the copier [D].
11. Join the connectors [E].
12. Reinstall the connector cover of the copier.



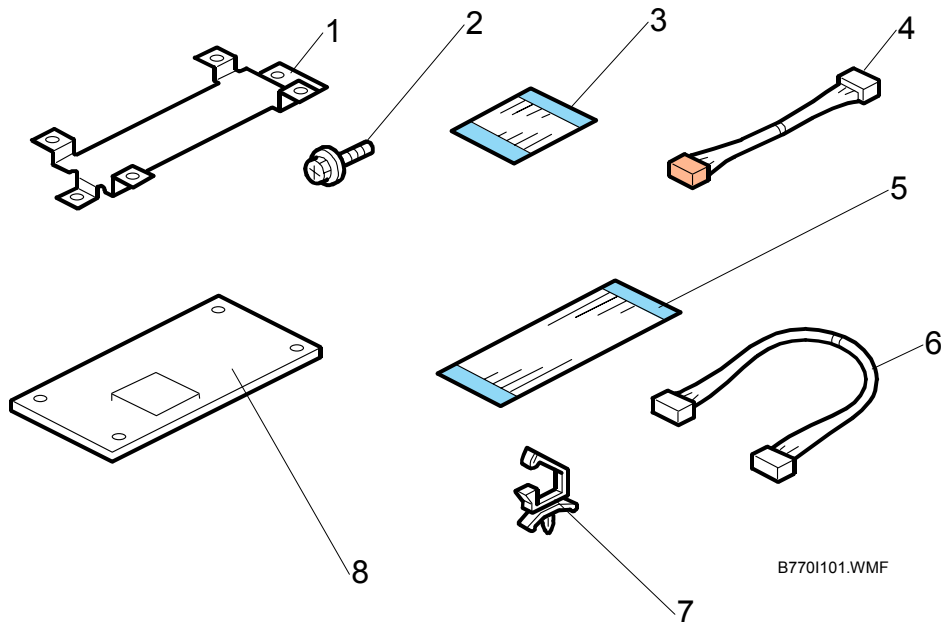
13. Remove two screws [A] from the rear side of the LCT.
14. Reinstall the rear cover of the LCT.
15. Reinstall the paper tray.
16. Remove the 2nd paper tray of the copier.
17. Remove two screws [B] and install the screws [C] which were removed in step 13.
18. Reinstall the 2nd paper tray of the copier.

1.20 COPY DATA SECURITY UNIT (B770)

Accessories

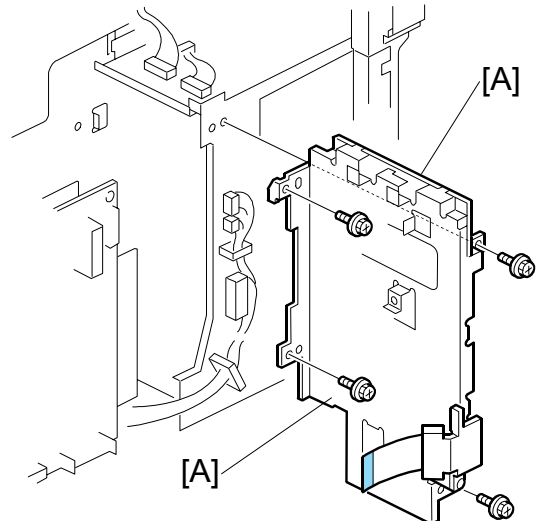
Check the accessories and their quantities against the following list:

Description	Qty
1. Bracket (Not used for the B205 series copiers)	1
2. Screws	4
3. FFC (Short) (Not used)	1
4. Harness (Not used)	1
5. FFC (Long)	1
6. Connection Cable	1
7. Harness Clamp	1
8. ICIB	1



⚠ CAUTION**TURN OFF THE MAIN POWER SWITCH AND DISCONNECT THE POWER SUPPLY CORD.**

1. Remove: (☞3.11.1)
 - Controller board plastic cover (🔩 x1).
 - Controller front plate screws (🔩 x2).
2. Remove: (☞3.10.4)
 - Paper tray unit connector cover (🔩 x1)
 - Disconnect the paper tray unit (if it is installed) (🔧 x1)
 - Rear cover (🔩 x1).
3. Pull the controller board partially out of the left slot to disconnect it from the IPU.
4. Remove the IPU [A] from the main machine.

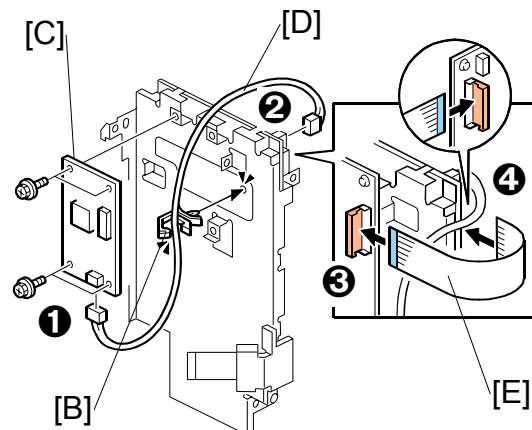


B770I102.WMF

NOTE:

- The board for this option is installed on the back of the IPU board.
- For more about removal, please refer to 3.11.7.

5. Attach harness clamp [B] (🔧 x1).
6. Attach the ICIB [C] (🔩 x4)
7. Connect the cable [D] to the ICIB ❶ and the IPU Board ❷.
8. Connect the flat film connector [E] to the ICIB ❸ and IPU boards ❹.
9. Reinstall the IPU board.
10. Turn on the machine.
11. Enable the Copy Data Security function:



B770I103.WMF

[User Tools]> System Settings> Administrator Tools> Copy Data Security Option

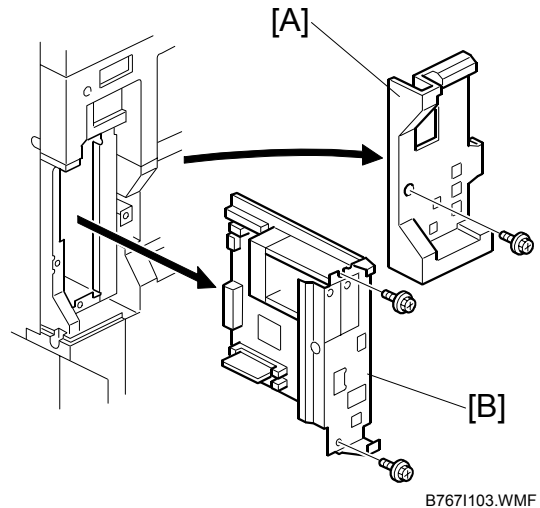
1.21 HDD (B773)

Accessories

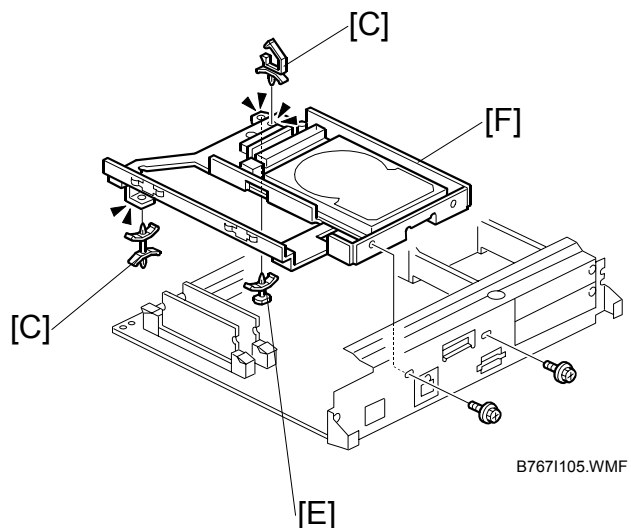
Check the accessories and their quantities against the following list:

Description	Qty
1. HDD Unit	1

1. Remove cover [A] (⌘ x1).
2. Remove controller board [B] (⌘ x1).



3. Attach:
 - Harness clamp [C]
 - Double standoff [D]
 - Single standoff [E]
4. Attach the HDD [F] to the controller board (⌘ x2).



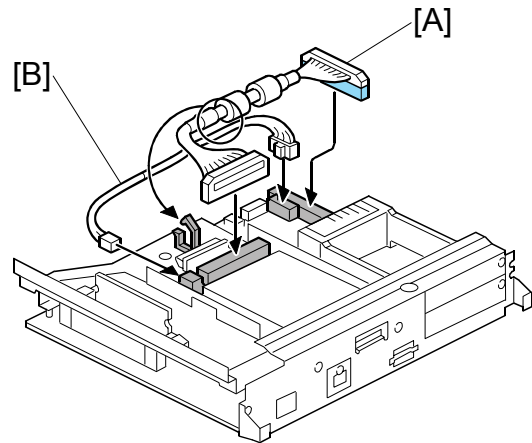
5. Connect the HDD harness [A] (🔌 x2).
6. Connect the AC harness [B] (🔌 x2, 🖨️ x1)

NOTE: Close the harness clamp around both cables.

7. Reinstall the controller board.

After Installing the HDD

1. Do SP5853 to copy the preset stamp data from the firmware to the hard disk. Then turn the main power switch off/on.
2. It is not necessary to format the new hard disk after installation.



B7671106.WMF

1.22 DATA OVERWRITE SECURITY UNIT (B735)

Before You Begin...

1. Confirm that the Data Overwrite Security unit SD card is the correct type for the machine. The correct type for this machine is Type "D".

Important: Do this now. If you install any version other than type "D", you will have to replace the **NVRAM** and do this installation procedure again.

2. Make sure that the following settings are not at the factory default settings:
 - Supervisor login password
 - Administrator login name
 - Administrator login password

Important: These settings must be set up by the customer before the Data Overwrite Security unit can be installed.

3. Confirm that "Admin. Authentication" is on:

[User Tools]> "System Settings"> "Administrator Tools"> "Administrator Authentication Management"> "Admin. Authentication"> "On"

If this setting is "Off" tell the customer that this setting must be "On" before you can do the installation procedure.

4. Confirm that "Administrator Tools" is selected and enabled:

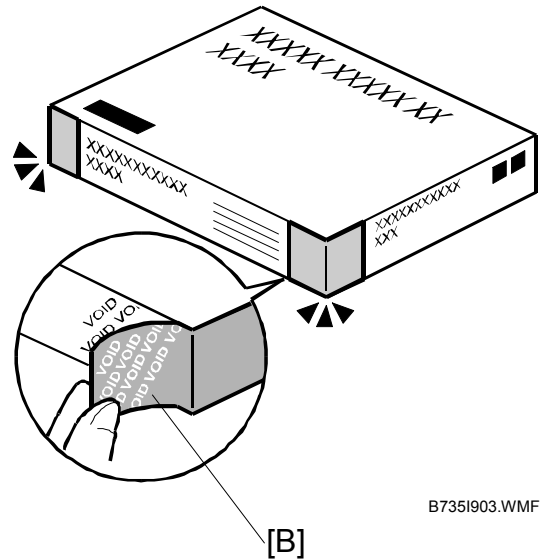
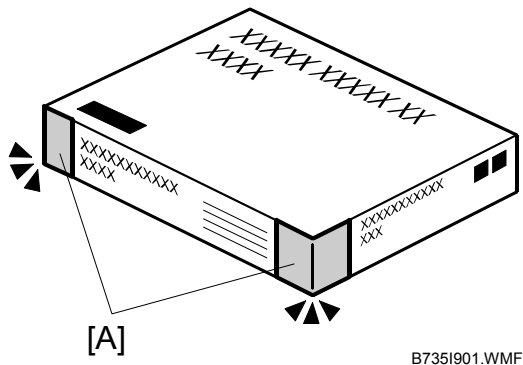
[User Tools]> "System Settings"> "Administrator Tools"> "Administrator Authentication Management"> "Available Settings"

NOTE: "Available Settings" is not displayed until Step 2 is done.

If this setting is not selected tell the customer that this setting must be selected before you can do the installation procedure.

Seal Check and Removal

Installation

**⚠ CAUTION****TURN OFF THE MAIN POWER SWITCH AND DISCONNECT THE POWER SUPPLY CORD.**

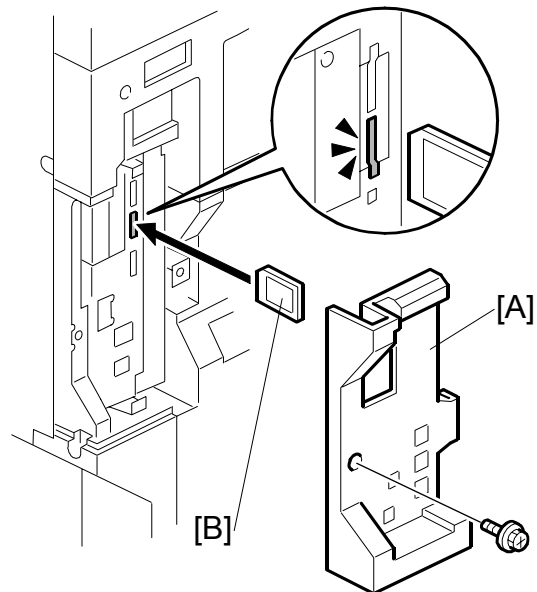
1. Check the box seals [A] on each corner of the box.
 - Make sure that a tape is attached to each corner.
 - The surfaces of the tapes must be blank. If you see "VOID" on the tapes, do not install the components in the box.
2. If the surfaces of the tapes do not show "VOID", remove them from the corners of the box.
3. When you remove each seal, the "VOID" marks [B] can be seen. In this condition, they cannot be reattached to the box.

Installation

Important

- The DOS SD card is inserted in SD card slot **C2**.
- The PostScript3 SD card must always reside in slot **C2**. If the DOS option is also required, move the DOS application to another SD card with SP5873.
- For more information about merging applications, refer to the Printer/Scanner Manual for the B205/B209, or to the Printer/Scanner Manual for the D007/D008.

1. If the machine is on, turn off the main power switch.
2. Disconnect the network cable.
3. Turn the main power switch on.
4. Turn the operation switch and main power switch off.
5. Remove the application cover [A] (x1).
6. With the printed side of the SD card [B] facing the rear of the machine, install the SD card in SD card slot C2.
7. Reconnect the network cable, if the network is connected to the copier.
8. Turn the main power switch on.
9. Do SP5-878 and push [EXECUTE].
10. Go out of the SP mode, turn the operation switch off, then turn the main power switch off.
11. Turn the machine power on.
12. Do SP5990-005 (SP print mode Diagnostic Report).



B7571101.WMF

RICOH Aficio 3045 *Adams-C*

Serial No.: 7M275840019 Firmware P/# : B2135931E
Firmware Version: 1.24 14

Self-Diagnosis Report

[System Construction]

Kernel Version : NetBSD 1.5.3 (LPUMIPS05S_NU) #3: Wed Mar 23 11:22:07 JST 2005
CPU System Bus Clock : 133.0 MHz CPU Pipeline Clock : 465,500,000 MHz
Board Type : 39 ASIC Version : 1414672944
RTC Existence : existence RAM Capacity : 384 MB
HDD Existence : existence HDD Model :

[Total Counter]

0000198

[ROM No / Firmware Version]

System/Copy	: B2135931E	/ 1.24	RPGL	:	/
Engine	: B2135160F	/ 1.24.07	R55	:	/
Lcdc	: B1985212A	/ 1.02	RTIFF	:	/
PI	:	/	PCL	:	/ 1.01
ADF	: B7145160A	/	PCLXL	:	/ 1.01
SIB	: B2135342	/	MSIS	:	/
Finisher	:	/	MSIS(OPTION)	:	/
Finisher (Saddle)	:	/	PDF	:	/
Bank	: A6825150	/	BMLinkS	:	/
LCT	:	/	PictBridge	:	/
Mail Box	:	/	FONT	: Z7675383	/ 0.04
FCU	:	/	FONT1	:	/
NIB	: B7835934D	/ 5.10	FONT2	:	/
[A] HDD Format Option	: B7355060	/ 0.03	FONT3	:	/
Language1	: B1985220	/ 3.92	Net File	: B7835938C	/ 1.02
Language2	: B1985220	/ 96	Fax	:	/
Bluetooth	:	/ 3.2.15	Printer	: B7835931A	/ 1.02
RPCS	:	/ 3.2.15	Scanner	: B7835932D	/ a4_1.05
PS	:	/	RFax	:	/
RPDL	:	/	MIS	:	/ 041130000
R58	:	/	WebSystem	: B7835936D	/ 1.08
R16	:	/	WebDocBox	: B7835937A	/ 1.01

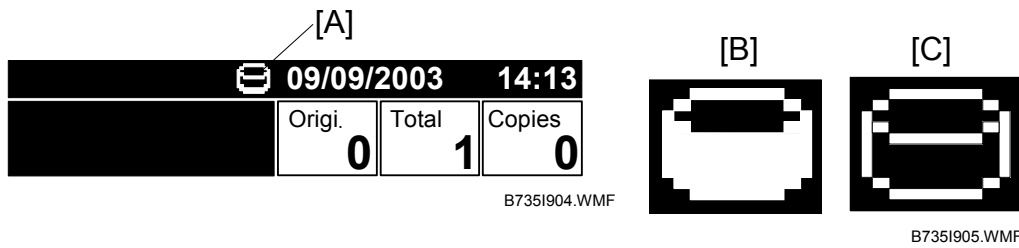
[Loading Program]

ADC4a_fax	: B2135932C	/ 01.05.00	{9fd10000}
ADC4a_system	: B2135931E	/ 1.24	{90d15000}
GW3e_DESS	: B7835940B	/ 2.01.1	{mnt/sd0/module/deas.mod}
[B] GW2a_zoffv	: B7355060	/ 0.03	{mnt/sd1/module/zoffv.mod}
GW1e_prt_fritM	: Z7675383	/ 0.04	{mnt/sd0/module/fonts_a.mod}
ADC4e_printer	: B7835931A	/ 1.02	{mnt/sd0/module/prt_exp.mod}
ADC4a_scan	: B7835932D	/ a4_1.05	{mnt/sd0/module/scan.mod}
ADC4a_net	: B7835934D	/ 5.10	{mnt/sd0/module/ncs.mod}
ADC4a_fax2	: B7835935B	/ 02.01.00	{mnt/sd0/module/fax.mod}
ADC4a_web	: B7835936D	/ 1.08	{mnt/sd0/module/websys.mod}
ADC4a_webdocbox	: B7835937A	/ 1.01	{mnt/sd0/module/webdb.mod}
ADC4a_netfile	: B7835938C	/ 1.02	{mnt/sd0/module/nfa.mod}

[Error List]

No Error

13. Make sure the ROM number and firmware version [A] in the diagnostic report are the same as the ROM and version number of [B].
14. Push [User Tools] and select System Settings> Administrator Tools> Auto Erase Memory Setting> On.
15. Exit from User Tools mode.



16. Check the display and make sure that the overwrite erase icon [A] is displayed.

17. Make a Sample Copy.

18. Check the overwrite erase icon.

- The icon [B] changes to [C] when job data is stored in the hard disk.
- The icon goes back to its usual shape [B] after this function has completed a data overwrite operation to the hard disk.

2. PREVENTIVE MAINTENANCE SCHEDULE

2.1 PM TABLE

NOTE: 1) The amounts mentioned as the PM interval indicate the number of prints.
2) After carrying out PM, clear the maintenance counter (SP7-804).

Symbol key: C: Clean, R: Replace, L: Lubricate, I: Inspect

Preventive
Maintenance

	EM	120K	240K	360K	NOTE
SCANNER/LASER OPTICS					
Reflector		C	C	C	Optics cloth
1st Mirror	C	C	C	C	Optics cloth
2nd Mirror	C	C	C	C	Optics cloth
3rd Mirror	C	C	C	C	Optics cloth
Scanner Guide Rails		C	C	C	Do not use alcohol.
Platen Sheet Cover	C	I	I	I	Replace the platen sheet, if necessary. Dry cloth or alcohol
Exposure Glass		C	C	C	Dry cloth or alcohol
Toner Shield Glass		C	C	C	Optics cloth
APS Sensor		C	C	C	Dry cloth or blower brush

	EM	120K	240K	360K	NOTE
AROUND THE DRUM					
Transfer/Separation Unit		R	R	R	
ID Sensor		C	C	C	Perform the ID sensor initial setting (SP2-935) after cleaning (blower brush)

	EM	60K	120K	180K	NOTE
PCU					
Drum		R	R	R	Do SP2801. This initializes the developer and resets the TD and ID sensor outputs to their defaults. It also resets the PCU counter.
Charge Roller		R	R	R	
Cleaning Roller		R	R	R	
Cleaning Blade		R	R	R	
Pick-off Pawls		R	R	R	
Developer		R	R	R	

	EM	120K	240K	360K	NOTE
PAPER FEED					
Registration Rollers	C	C	C	C	Clean with water
Paper Feed Roller	C	R	R	R	Clean with water
Friction Pad	C	R	R	R	Dry cloth
Paper Feed Guides	C	C	C	C	Clean with alcohol.
Relay Rollers	C	C	C	C	Clean with water.
Bottom Plate Pad	C	C	C	C	Clean with water.
Registration Roller Mylar	C	C	C	C	Clean with water.
Dust collection box	C	C	C	C	Remove, empty, clean

	EM	120K	240K	360K	NOTE
FUSING UNIT AND PAPER EXIT					
Fusing Entrance and Exit Guide Plates		C	C	C	Clean with water or alcohol.
Hot Roller		R	R	R	Clean with water or alcohol.
Pressure Roller		R	R	R	
Fusing Thermistors		R	R	R	
Cleaning Roller		C	C	C	
Cleaning Roller Bushings		C	C	C	
Hot Roller Strippers		R	R	R	
Hot Roller and Pressure Roller Bushings	L	L	L	L	Grease Barrierta JFE5 5/2 (A0289300)
Paper Exit Guide Ribs		C	C	C	Clean with water or alcohol.
OTHERS					
Main Motor Drive Gear	L	I	I	I	Silicone Grease G501 (●2.2)

	EM	120K	240K	360K	NOTE
ADF (for originals)					
Pick-up Roller	C	R	R	R	Clean with water
Feed Belt	C	R	R	R	Clean with water
Separation Roller	C	R	R	R	Clean with water
Stamp		I	I	I	Replace if necessary
ADF Exposure Glass	C	C	C	C	Clean with alcohol
White Plate	C	C	C	C	Clean with alcohol
Platen Sheet	C	C	C	C	Clean with alcohol

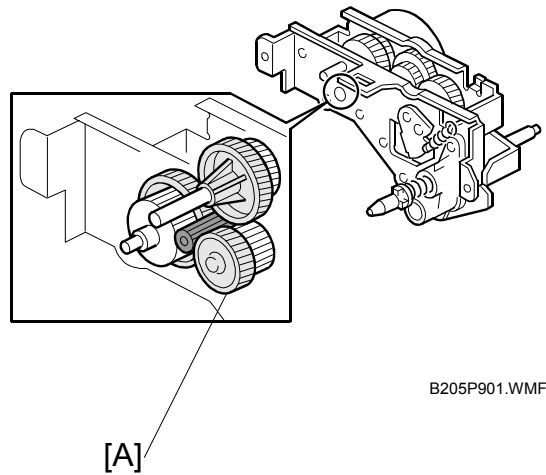
	EM	120K	240K	360K	NOTE
PAPER TRAY UNIT					
Paper Feed Roller	C	R	R	R	Clean with water
Friction Pad	C	R	R	R	Dry cloth
Paper Feed Guides	C	C	C	C	Clean with alcohol.
Relay Rollers	C	C	C	C	Clean with water.
Bottom Plate Pad	C	C	C	C	Clean with water.
Relay Clutch		I	I	I	Replace if necessary
Paper Feed Clutch		I	I	I	Replace if necessary

	EM	120K	240K	360K	NOTE
LCT					
Paper Feed Roller		R	R	R	
Pick-up Roller		R	R	R	
Separation Roller		R	R	R	
Transport Rollers		C	C	C	Clean with water
Bottom Plate Pad		C	C	C	Clean with water
Relay Clutch		I	I	I	Replace if necessary
Paper Feed Clutch		I	I	I	Replace if necessary

	EM	120K	240K	360K	NOTE
1,000-SHEET FINISHER					
Rollers	C				Clean with water or alcohol.
Brush Roller	I	I	I	I	Replace if necessary.
Discharge Brush	C	C	C	C	Clean with a dry cloth
Sensors	C				Blower brush
Jogger Fences	I	I	I	I	Replace if necessary.

	EM	150K	300K	450K	NOTE
1-BIN TRAY UNIT					
Rollers	C				Dry or damp cloth
Copy Tray	C				Dry or damp cloth
Sensors	C				Blower brush

2.2 MAIN MOTOR DRIVE GEAR



At every EM lubricate the main motor drive gear [A] with silicone grease G501.

3. REPLACEMENT AND ADJUSTMENT

CAUTION

Turn off the main power switch and unplug the machine before attempting any of the procedures in this section.

3.1 SPECIAL TOOLS AND LUBRICANTS

3.2 SPECIAL TOOLS

No.	Part No.	Description	Q'ty	Availability
1	A0069104	Scanner Positioning Pins (4 pins/set)	1	Common – R-C3
2	A2929500	Test Chart S5S (10 pcs/set)	1	Common - General
3	VSSM9000	Digital Multimeter FLUKE 87	1	Common - General
4	A2309003	Adjustment Cam – Laser Unit	1	Common – R-C3
5	A2309002	Positioning Pin – Laser Unit	1	Common – R-C3
6	B6455010	SD-Card	1	Common - General
7	B6456800	USB Reader/Writer	1	Common - General
8	G0219350	Loop-back Connector	1	Common - General

Replacement
Adjustment

3.3 LUBRICANTS

No.	Part No.	Description	Q'ty	Availability
1	A2579300	Grease Barrierta S552R	1	Common - General
2	52039502	Silicone Grease G-501	1	Common - General

3.4 GENERAL CAUTIONS

3.4.1 PCU (PHOTOCONDUCTOR UNIT)

The PCU consists of the OPC drum, development unit, charge roller, and cleaning unit. Follow the cautions below when handling a PCU.

1. Never touch the drum surface with bare hands. When the drum surface is touched or becomes dirty, wipe it with a dry cloth or clean it with wet cotton. Wipe with a dry cloth after cleaning with the cotton.
2. Never use alcohol to clean the drum; alcohol dissolves the drum surface.
3. Store the PCU in a cool, dry place away from heat.
4. Never expose the drum to corrosive gases such as ammonia gas.
5. Never shake the used PCU. Doing so may cause toner and/or developer to spill out.
6. Dispose of used PCUs in accordance with local regulations.

3.4.2 TRANSFER ROLLER UNIT

1. Never touch the transfer roller surface with bare hands.
2. Take care not to scratch the transfer roller as the surface is easily damaged.

3.4.3 SCANNER UNIT

1. Clean the exposure glass with alcohol or with glass cleaner to reduce the amount of static electricity on the surface of the glass.
2. Use a blower brush or a cotton pad with water to clean the mirrors and lens.
3. Do not bend or crease the exposure lamp flat cable.
4. Do not disassemble the lens unit. Doing so will throw the lens and the copy image out of focus.
5. Do not turn any of the CCD positioning screws. Doing so will throw the CCD out of position.

3.4.4 LASER UNIT

1. Do not loosen the screws that secure the LD drive board to the laser diode casing. Doing so will throw the LD unit out of adjustment.
2. Do not adjust the variable resistors on the LD unit, as they are adjusted in the factory.
3. The polygon mirror and F-theta mirror are very sensitive to dust.
4. Do not touch the glass surface of the polygon mirror motor unit with bare hands.

3.4.5 FUSING UNIT

1. After installing the fusing thermistor, make sure that it is in contact with the hot roller and that the hot roller can rotate freely.
2. Be careful not to damage the edges of the hot roller strippers or their tension springs.
3. Do not touch the fusing lamp and rollers with bare hands.
4. Make sure that the fusing lamp is positioned correctly and that it does not touch the inner surface of the hot roller.

Replacement
Adjustment

3.4.6 PAPER FEED

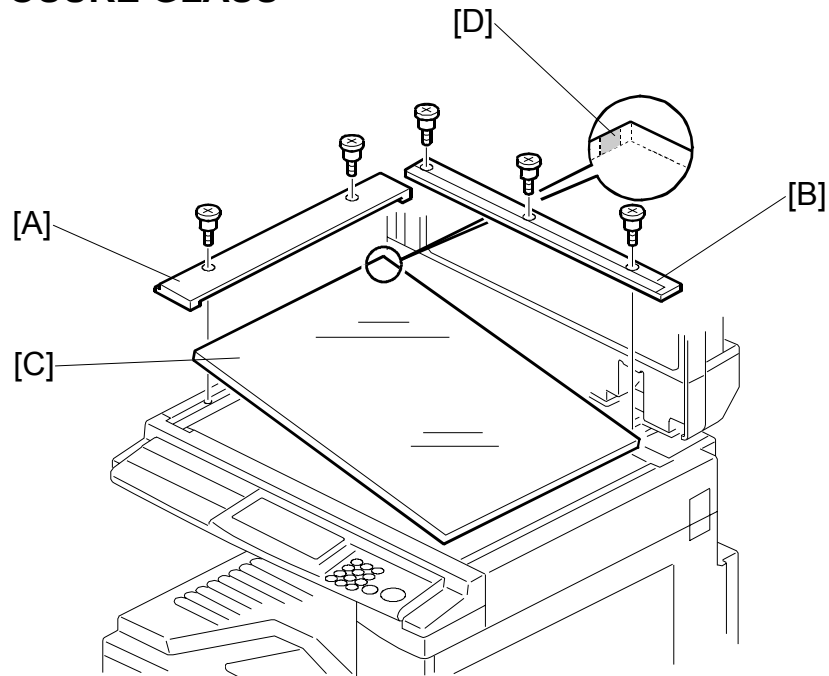
1. Do not touch the surface of the paper feed roller.
2. To avoid paper misfeeds, the side fences and end fences of the paper tray must be positioned correctly to align with the actual paper size.

3.4.7 OTHERS

1. The toner bottle should be replaced while the main switch is on.
2. If the optional tray, drum, and optics anti-condensation heaters have been installed, keep the copier power cord plugged in, even when the copier main switch is turned off. This keeps the heaters energized.

3.5 SCANNER UNIT

3.5.1 EXPOSURE GLASS

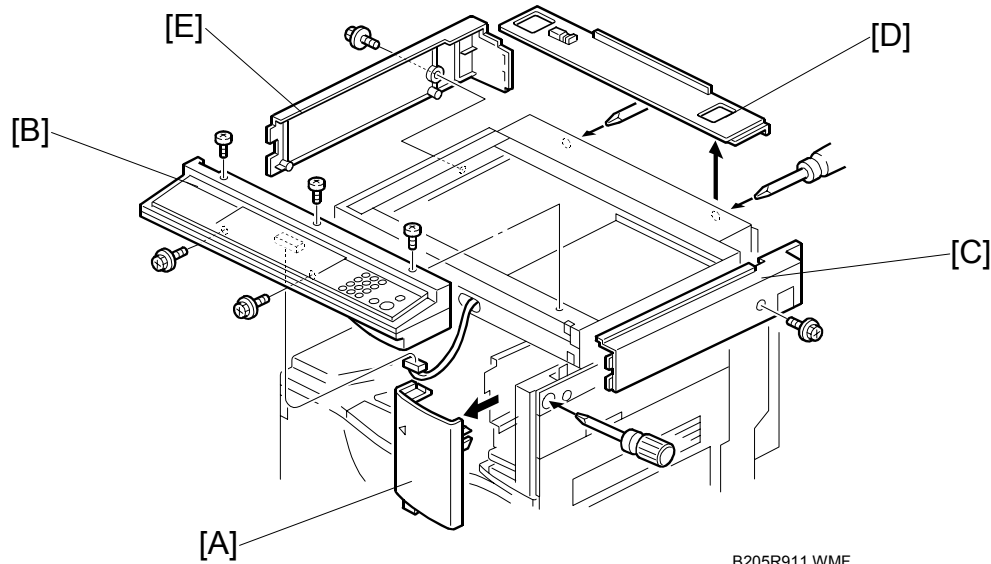


B205R909.WMF

1. Open the ADF or platen cover.
2. Remove the left scale [A] (⚙ x2).
3. Remove the rear scale [B] (⚙ x3).
4. Remove the exposure glass [C].

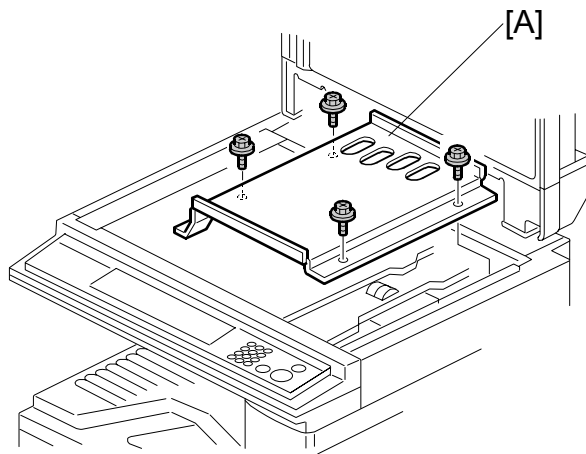
NOTE: When reinstalling the exposure glass, make sure that the mark [D] is positioned at the rear left corner, as shown.

3.5.2 SCANNER EXTERIOR/OPERATION PANEL

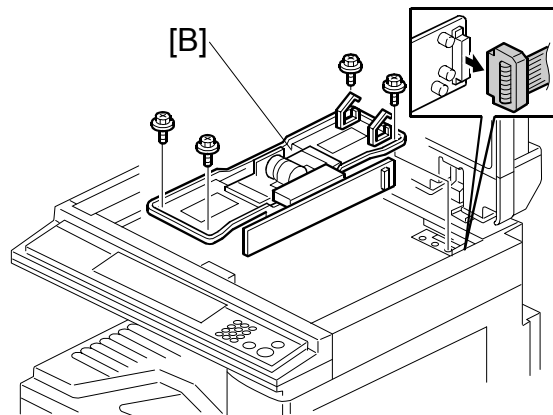


1. Remove the ADF or platen cover.
2. Remove the exposure glass. (☛ 3.5.1)
3. Remove the upper front cover [A] (☛ x1, Hook x1).
4. Remove the operation panel [B] (☛ x5, ☛ x1).
5. Remove the right cover [C] (☛ x1, Hook x2).
6. Remove the rear cover [D] (☛ x2).
7. Remove the left cover [E] (☛ x2, Hook x2).

3.5.3 LENS BLOCK ASSEMBLY



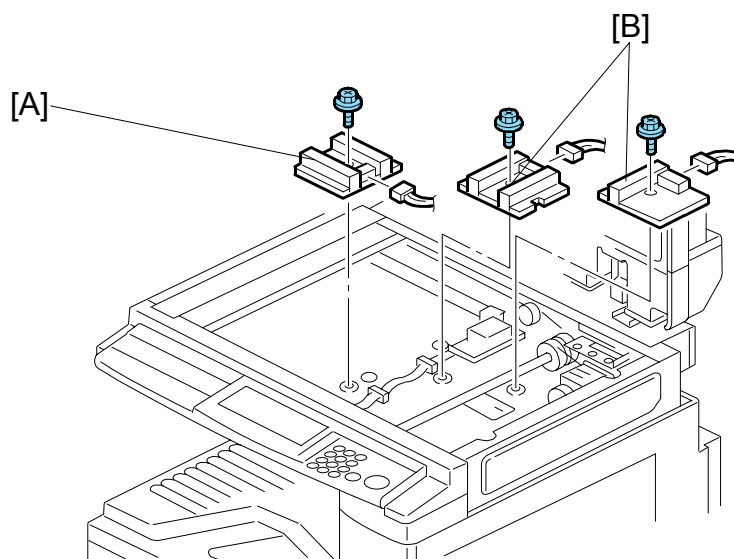
B205R912.WMF



B205R913.WMF

1. Remove the exposure glass. (➡ 3.5.1)
2. Remove the lens cover [A] (🔧 x4).
3. Replace the lens block assembly [B] (🔧 x4, 📏 x1, 📏 x2).
NOTE: Do not remove the screws which are locked with white paint.
4. Reassemble the machine and do the scanner and printer copy adjustments.
(➡ 3.12)

3.5.4 ORIGINAL SIZE SENSORS

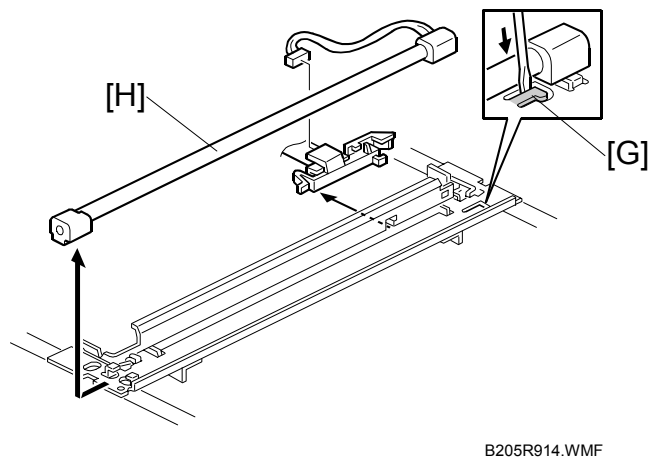
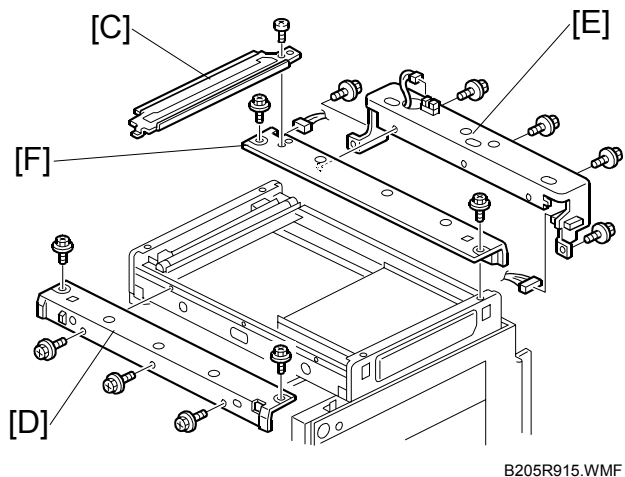
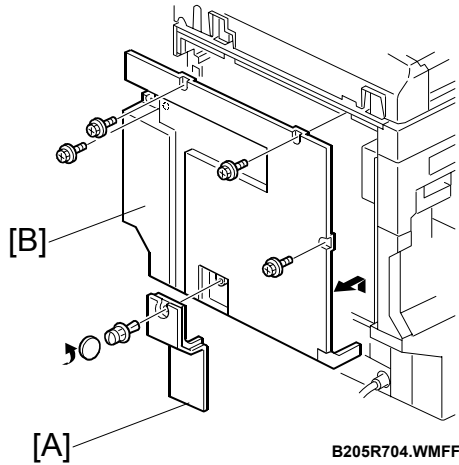


B205R054.WMFF

1. Remove the exposure glass. (☛ 3.5.1)
2. Remove the lens cover. (☛ 3.5.3)
3. Remove the original width sensor [A] (🔧 x1, 🛠 x1).
4. Remove the lens block. (☛ 3.5.3)
5. Remove the original length sensors [B] (🔧 x1, 🛠 x1 ea.).

Replacement
Adjustment

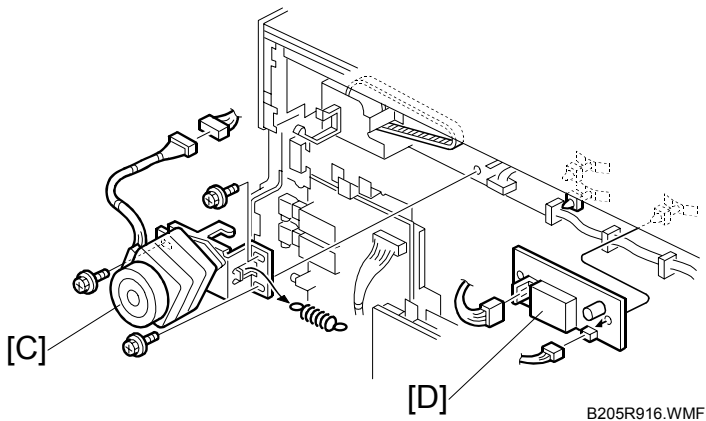
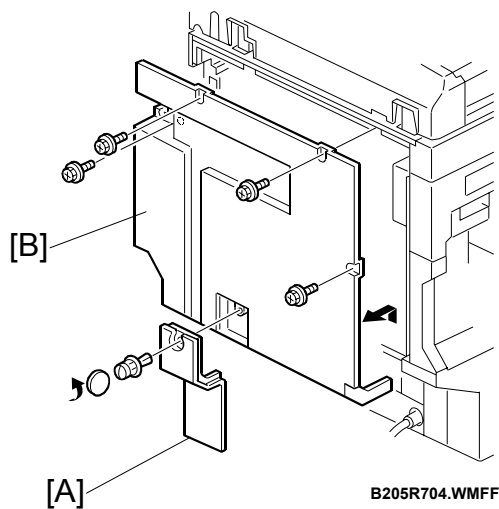
3.5.5 EXPOSURE LAMP



1. Remove the exposure glass. (☛ 3.5.1)
2. Remove the operation panel, rear cover, and left cover. (☛ 3.5.2)
3. Remove the connector cover [A], disconnect the cable, and remove the rear cover [B] (⚙ x4).
4. Remove the left upper stay [C] (⚙ x1).
5. Remove the front frame [D] (⚙ x5).
6. Remove the rear bracket [E] (⚙ x5, 🛠 x2).
7. Remove the rear frame [F] (⚙ x2, 🛠 x1).
8. Push down the part [G] then slide out the exposure lamp [H] (🛠 x1).

NOTE: 1) Do not touch the glass surface of the exposure lamp with bare hands.
 2) After installing the lamp, the part [G] must be returned to the original position.

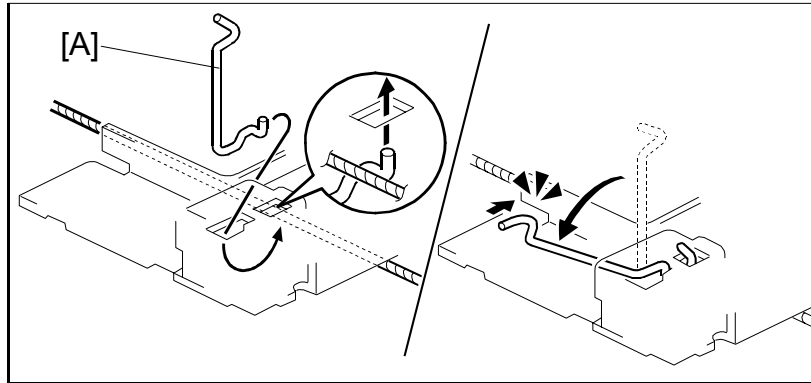
3.5.6 SCANNER MOTOR/LAMP STABILIZER



Replacement
Adjustment

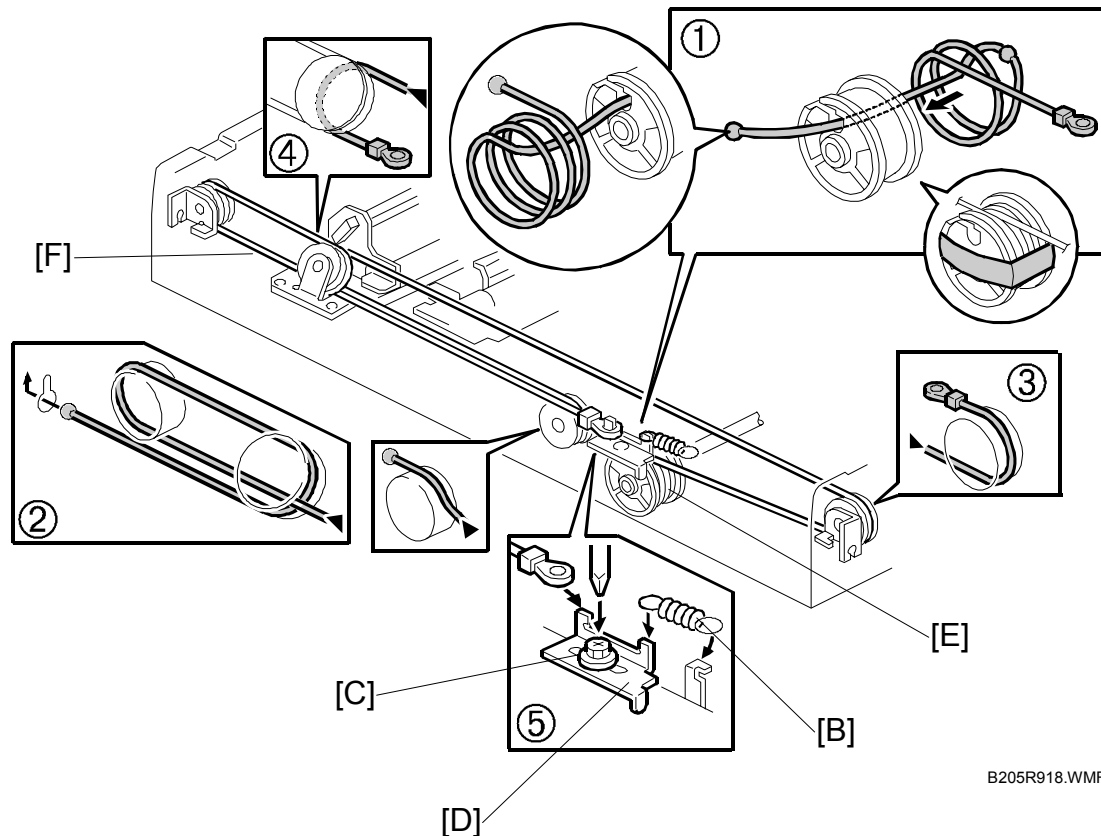
1. Remove the connector cover [A], disconnect the cable, and remove the rear cover [B].
2. Replace the scanner motor [C] (⚙ x3, 1 spring, 🌀 x1).
3. Replace the lamp stabilizer [D] (🌀 x2).
4. Reassemble the machine and do the scanner and printer copy adjustments. (➡ 3.12)

3.5.7 SCANNER WIRES



B205R917.WMF

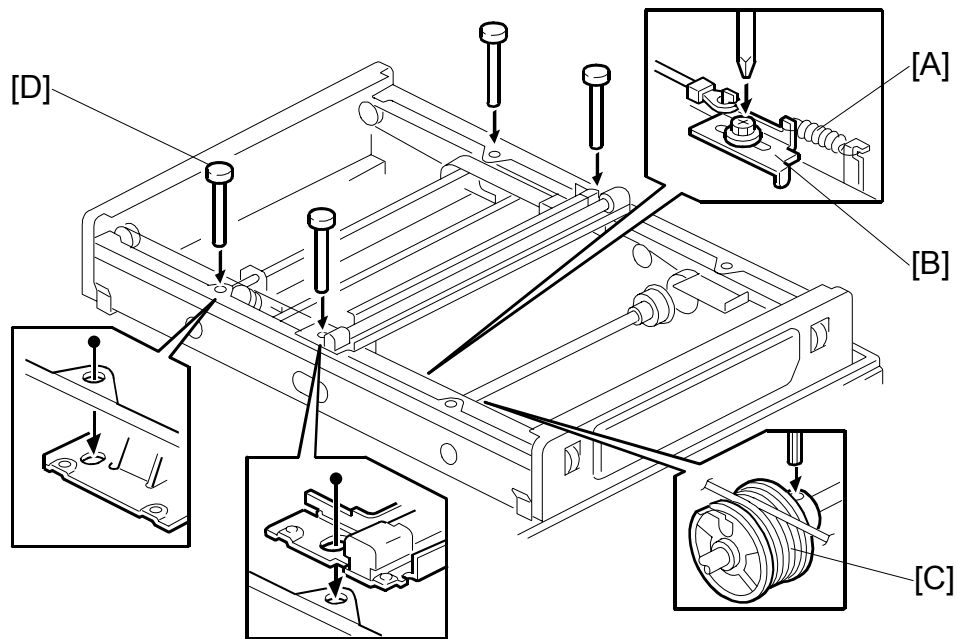
1. Remove the exposure glass, operation panel, and all scanner exterior covers. (☛ 3.5.1, 3.5.2)
2. Remove these parts: (☛ 3.5.5)
 - Left upper stay
 - Front frame
 - Rear bracket
 - Rear frame
3. Remove these parts: (☛ 3.5.3)
 - Lens cover
 - Lens block assembly
4. Remove the front and rear scanner wire pins [A]. Then, remove the 1st scanner.





Replacement
Adjustment

B205R918.WMF

5. Remove the tension spring [B].
6. Loosen the screw [C] securing the wire tension bracket [D].
7. Remove the scanner drive pulley [E] (⚙ x1).
8. Remove the scanner wire [F].
9. Wrap the new scanner wire around the pulley as shown ①, then temporarily secure the pulley with tape.
10. Re-install the 1st scanner. Then secure the 1st and 2nd scanner with the scanner positioning tools (P/N A0069104), as shown in the illustration on the next page.
11. Wind the new scanner wire around the scanner drive pulley in the correct way, as shown.
12. Wind the end of the new wire with the ball as shown (②).
13. Wind the end of the new wire with the ring as shown (③, ④, and ⑤).
14. Install the tension spring on the wire tension bracket (⑤).
15. Wind the new scanner wire for the other side as well.



B205R919.WMF

20. Secure the 1st scanner with the scanner wire pins.
21. Install the tension spring [A] to the tension bracket.
22. Tighten the tension bracket [B].
23. Secure the scanner wire pulley [C] (Allen  x1).
24. Remove the positioning tools [D]. After sliding the scanner to the right and left several times, re-install the positioning tools to check the scanner wire bracket and tension bracket again.
25. Reassemble the scanner and do the scanner and printer copy adjustments ( 3.12).

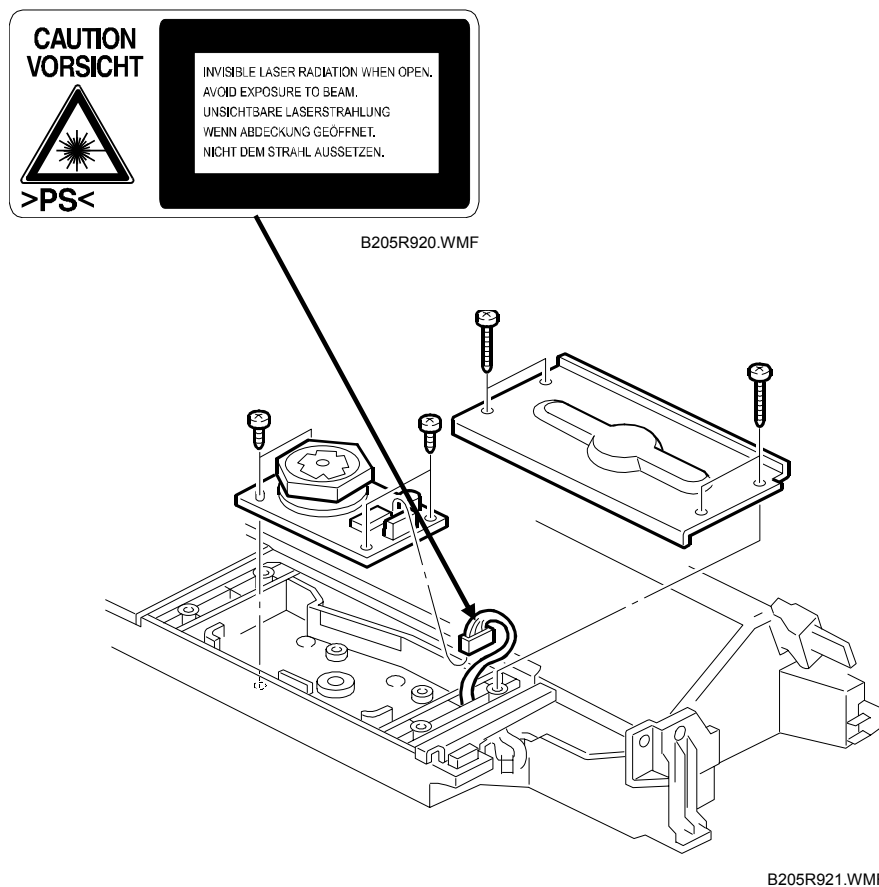
3.6 LASER UNIT

⚠ WARNING

Turn off the main power switch and unplug the machine before attempting any of the procedures in this section. Laser beams can seriously damage your eyes.

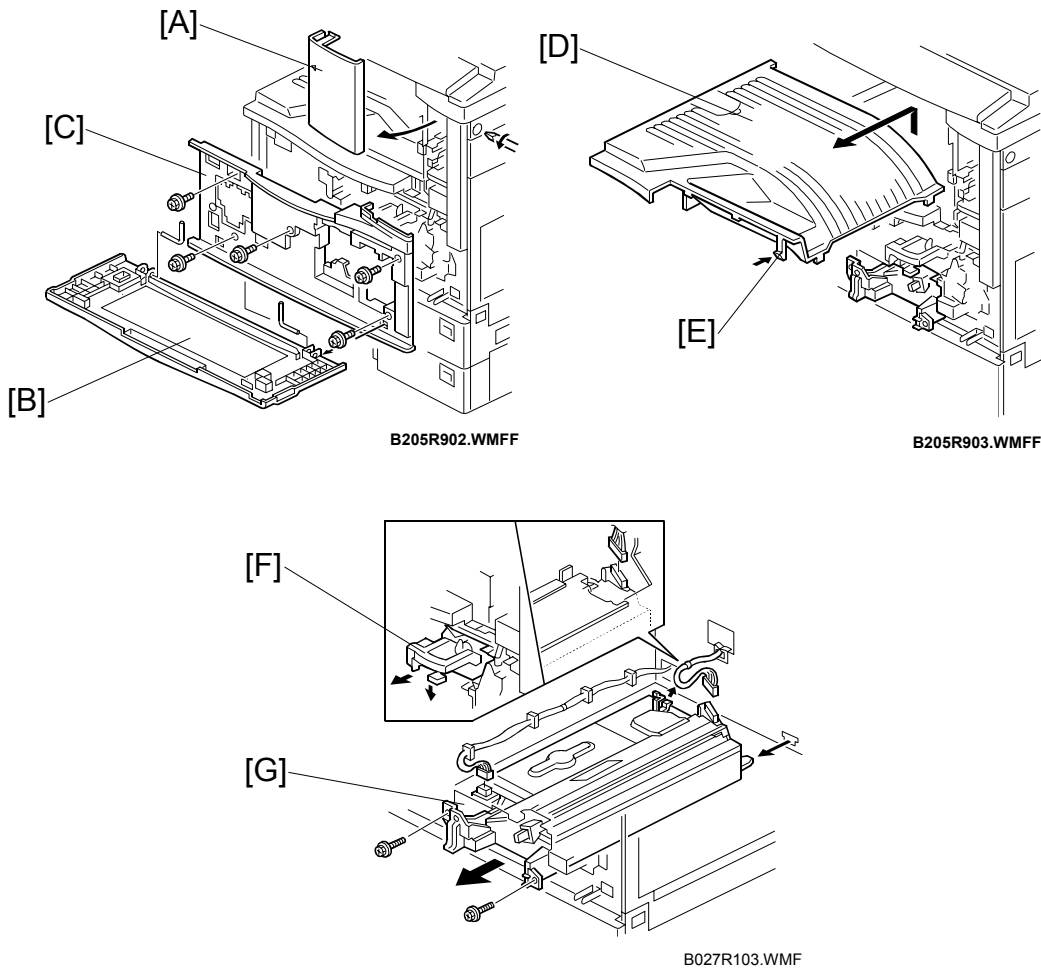
3.6.1 CAUTION DECAL LOCATIONS

Two caution decals are located in the laser section as shown below.



Replacement
Adjustment

3.6.2 LASER UNIT

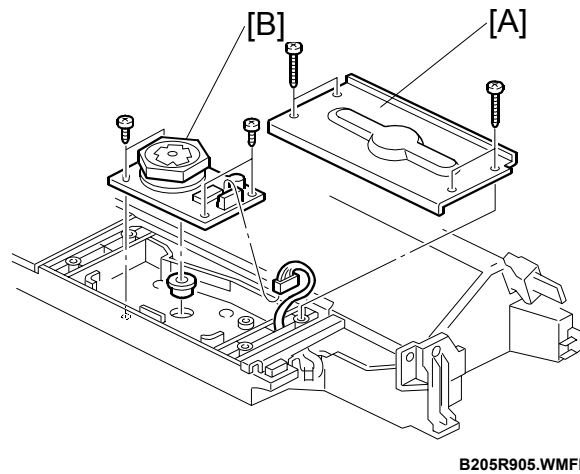


⚠ WARNING

Turn off the main power switch and unplug the machine before attempting this procedure. Laser beam can seriously damage your eyes.

1. Remove the optional finisher/bridge unit, and either the tray for the optional 1-bin tray unit or optional shift tray, if these units have been installed.
2. Remove the upper front cover [A] (⚙ x1, 1 hook).
3. Remove the front cover [B] (2 pins).
4. Remove the inner cover [C] (⚙ x5).
5. Remove the copy tray [D] (1 hook [E]).
6. Remove the toner bottle holder [F].
7. Remove the laser unit [G] (⚙ x2, 📏 x2).
8. After reassembling the machine, do the scanner and printer copy adjustments. (👉 3.12)

3.6.3 POLYGON MIRROR MOTOR

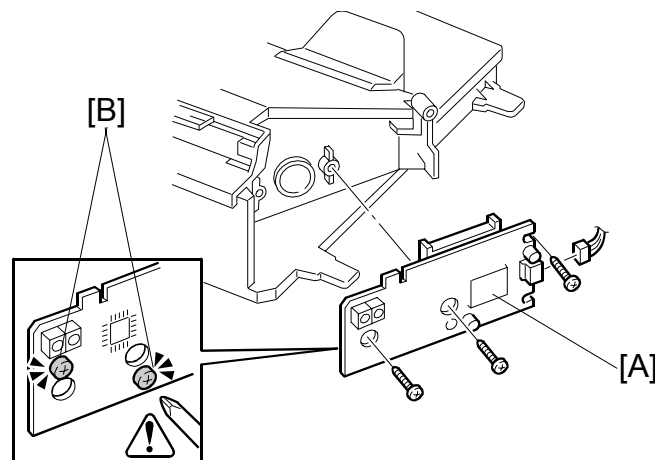


1. Remove the laser unit (☛ 3.6.2).
2. Remove the heat sink [A] (🔩 x4).
3. Replace the polygon mirror motor [B] (🔩 x4, 📡 x1).

NOTE: When installing the new polygon mirror motor, do not touch the surface of the mirror with bare hands.

Replacement
Adjustment

3.6.4 LD UNIT

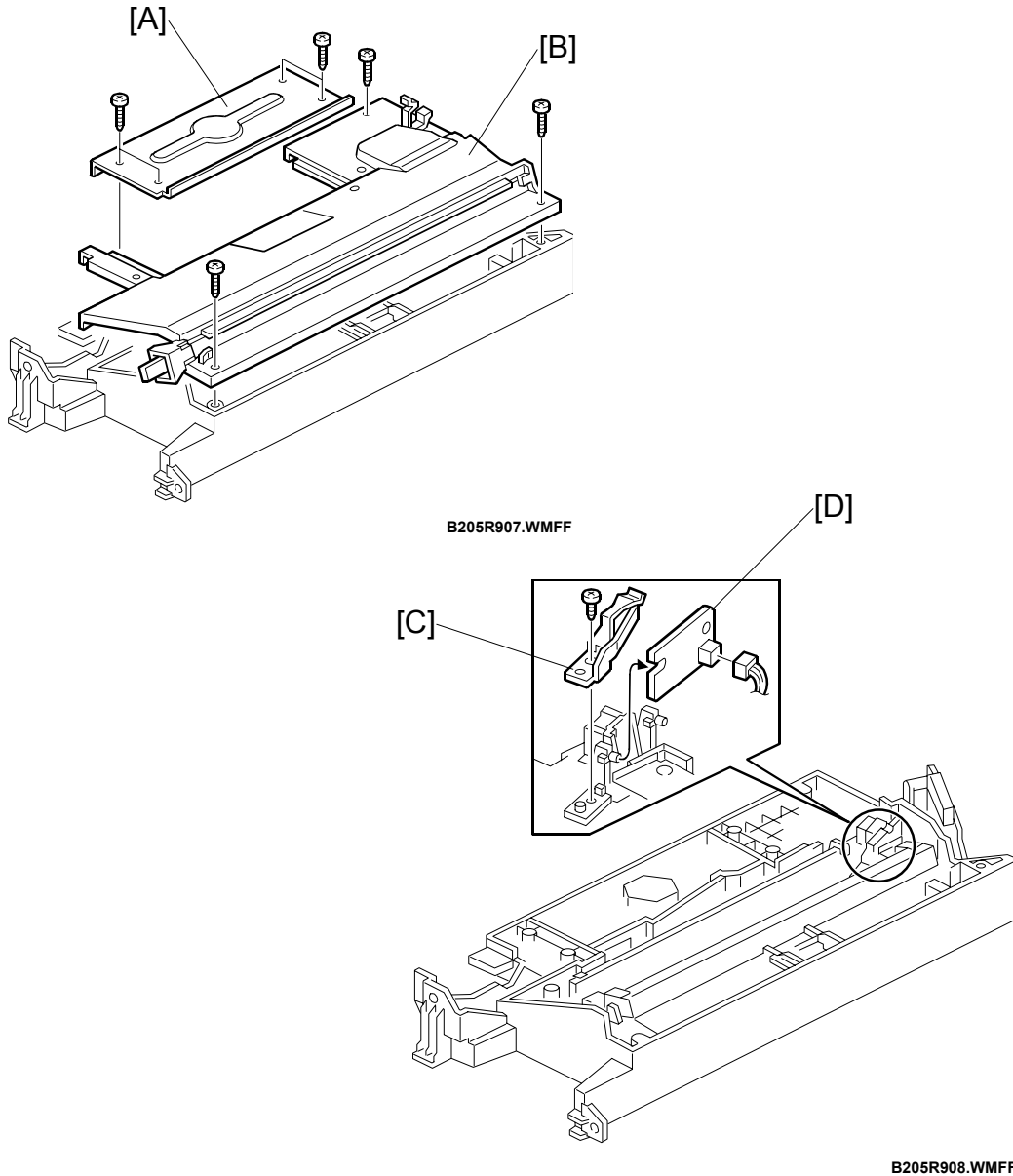


B205R906.WMFF

1. Remove the laser unit (☛ 3.6.2).
2. Replace the LD unit [A] (🔩 x3, 📡 x1).

NOTE: 1) Do not remove the screws [B].
2) Do not touch any variable resistors on the LD unit.

3.6.5 LASER SYNCHRONIZATION DETECTOR

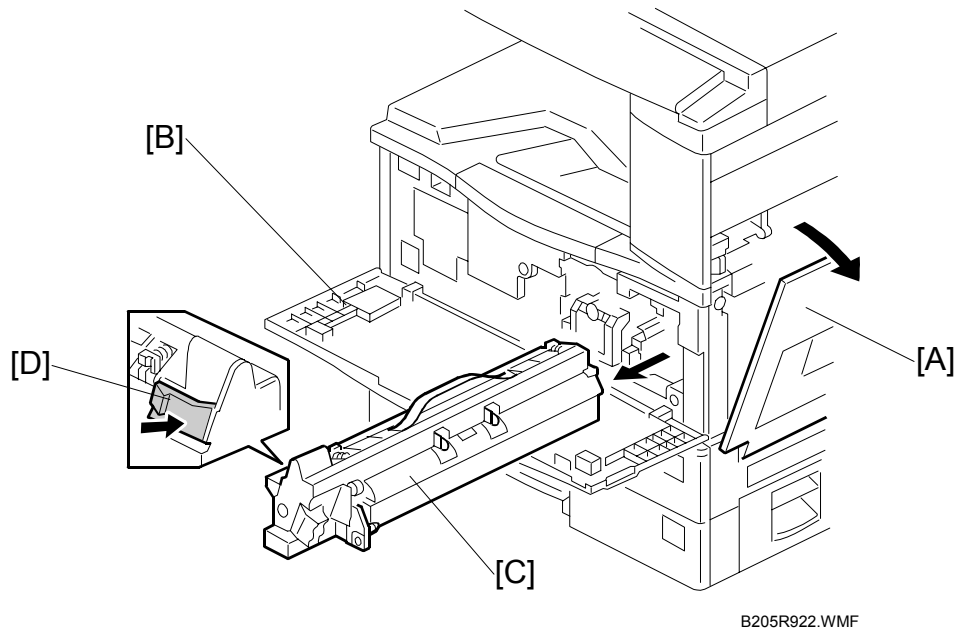


Replacement
Adjustment

1. Remove the laser unit (➡3.6.2).
2. Remove the heat sink [A] (⚙ x4).
3. Remove the laser unit cover [B] (⚙ x3).
4. Remove the bracket [C] (⚙ x1).
5. Replace the laser synchronization detector [D] (🔌 x1).

3.7 PHOTOCONDUCTOR UNIT (PCU)

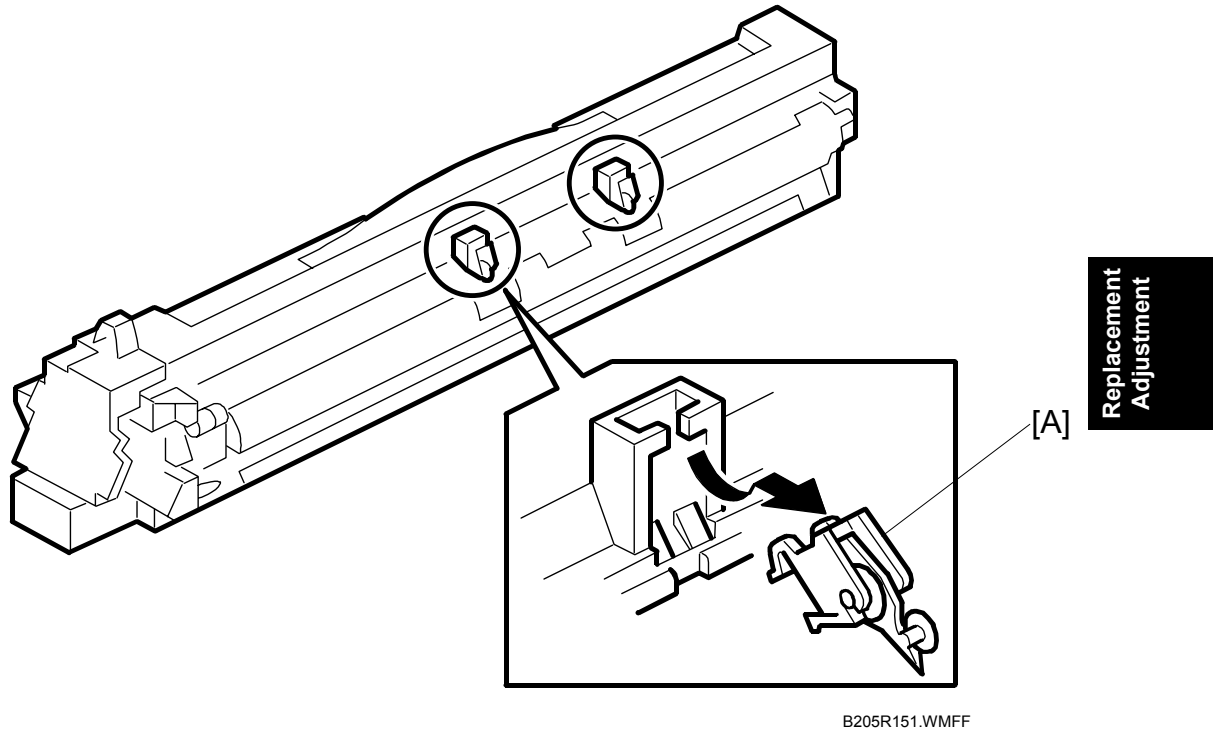
3.7.1 PCU REMOVAL



1. Open the right cover [A] and front cover [B].
2. Pull the PCU [C] out a small distance while you push the release lever [D], then remove the PCU.

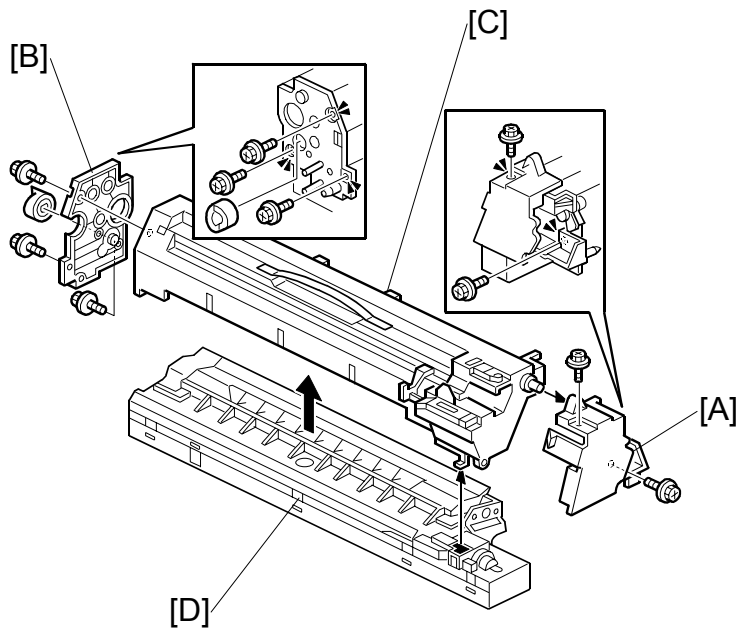
NOTE: Do not touch the drum surface with bare hands.

3.7.2 PICK-OFF PAWLS



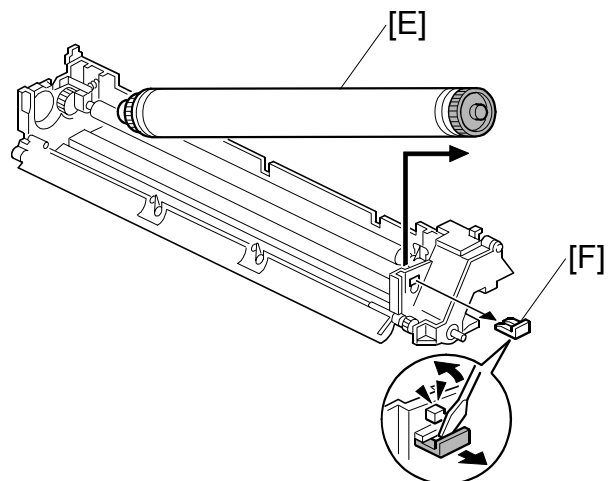
1. Remove the PCU. (➡3.7.1)
2. Hold the pawl [A] by its sides, pull it down and slowly twist it away from the PCU.

3.7.3 OPC DRUM



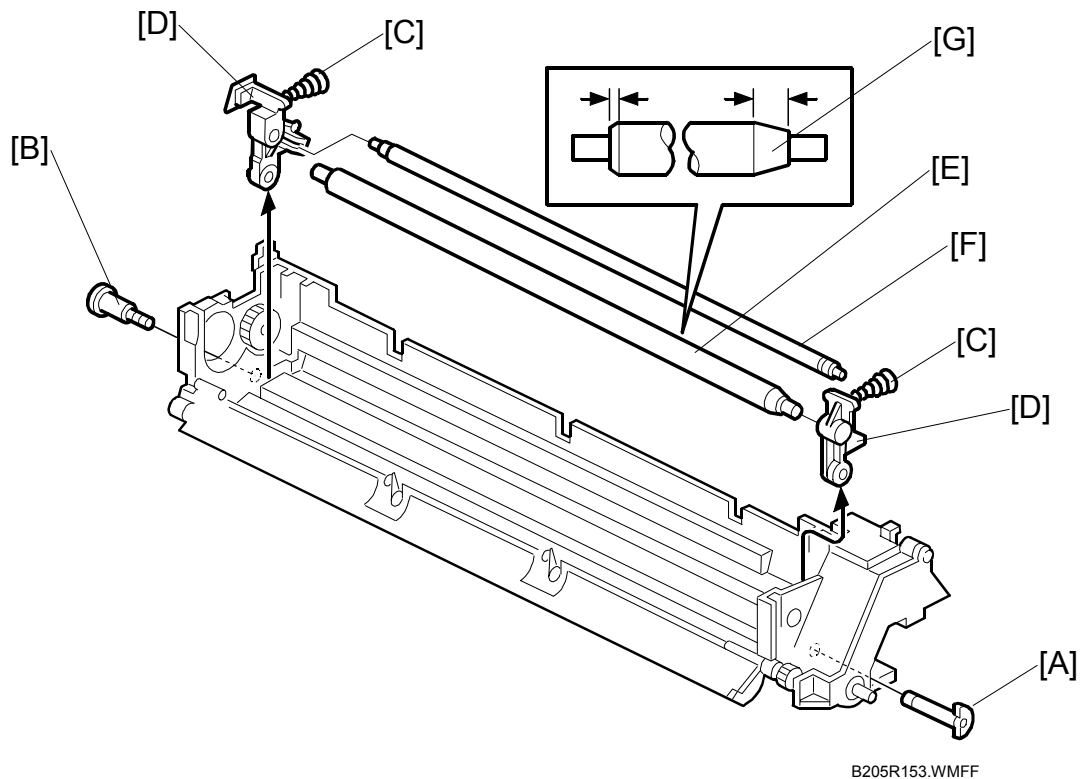
B205R923.WMFF

- Remove the PCU. (☛3.7.1)
- [A]: Front cover (☛ x2)
- [B]: Rear cover (☛ x3, Coupling x1)
- [C]: Top part
- [D]: Bottom part
- [E]: Drum (White clip x1 [F])



B205R152.WMFF

3.7.4 CHARGE ROLLER, CLEANING ROLLER

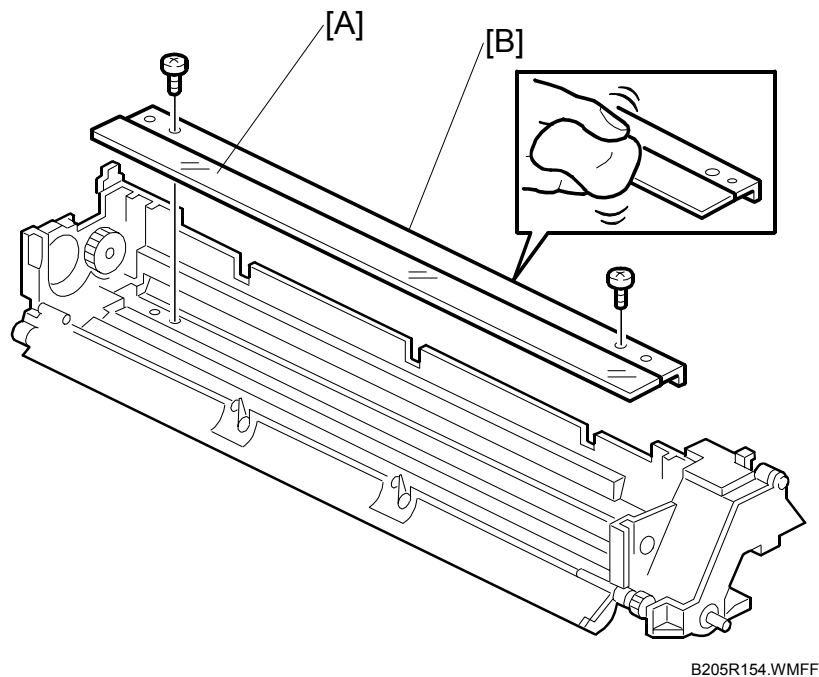

 Replacement
Adjustment

- Remove the PCU. (➡3.7.1)
- Remove the OPC drum (➡3.7.3)
- [A]: Front stud (x1)
- [B]: Rear shoulder screw (➡x1)
- [C]: Release the front and rear springs.
- [D]: Remove the roller assembly (Springs x2, Arms x2, Rollers x2)
- [E]: Charge roller
- [F]: Cleaning roller

Re-installation: Charge Roller

- Put the end of the charge roller with the wide bevel [G] at the front of the PCU.
- The ends of the cleaning roller [F] are the same (put either end at the front).
- Make sure that the front stud of the roller assembly is put in the correct position.
- Install the front stud before you tighten the rear shoulder screw. Make sure that the head of the stud is put in the correct position.

3.7.5 CLEANING BLADE



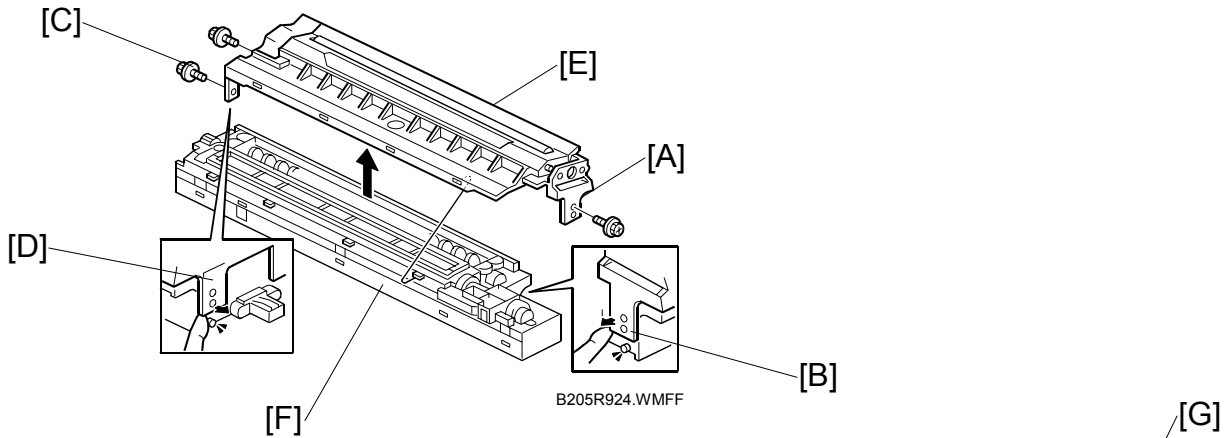
- Remove the PCU. (☛3.7.1)
- Remove the OPC drum (☛3.7.3)
- Remove the charge roller, cleaning roller (☛3.7.4)

[A]: Cleaning blade (🔧 x2)

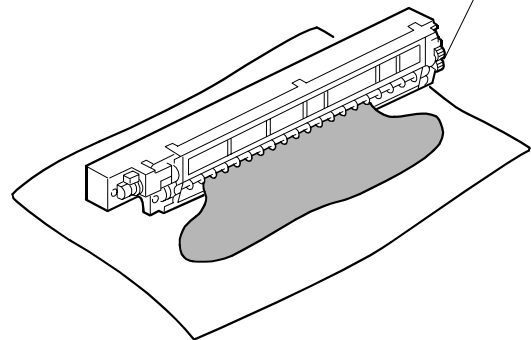
Reinstallation: Cleaning Blade

- To prevent damage to the new cleaning blade and OPC drum, apply some toner to the edge of the new blade [B].
- Install the new blade. Remove some toner from the edge of the old blade with your finger, and apply it evenly along the full length of the new blade.

3.7.6 DEVELOPER



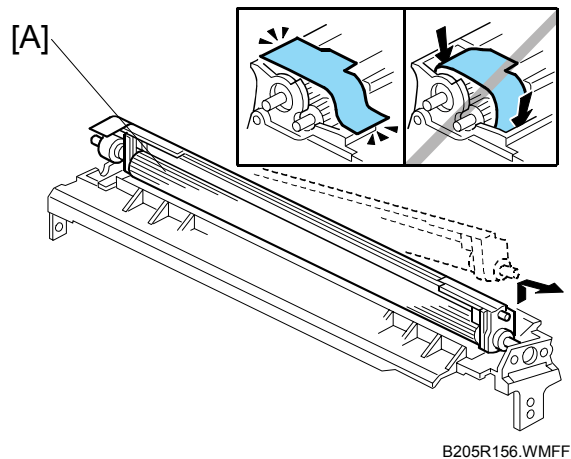
1. Spread the vinyl sheet provided with the developer kit on a flat surface.
2. Separate the top and bottom parts of the PCU. (● 3.7.4)
3. Set the bottom on the vinyl sheet.
4. Remove the front screw [A] (⚙ x1)
5. Remove the rear screws [C] (⚙ x2).
6. Release the front tab [B].
7. Release the rear tab [D].
8. Separate the top [E] and bottom [F] of the development unit.
9. Turn the gears [G] to remove the developer from the bottom half.



Replacement
Adjustment

10. Remove the development roller [A] from the development unit.

Important: At reinstallation, make sure that the mylar is positioned as shown.

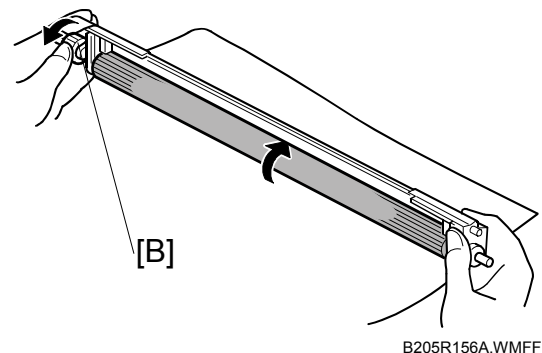


11. Turn the development roller gear [B] to remove toner from around the development roller.

12. Assemble the development unit.

Important

- Dispose of the used developer according to the local laws and regulations regarding the disposal of such items.

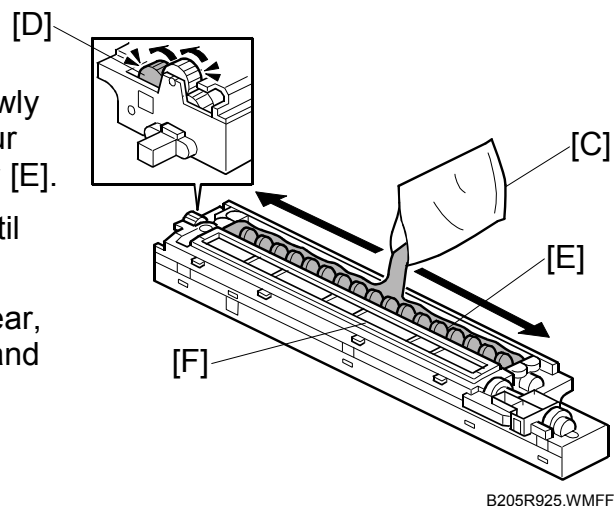


13. Open the developer pack [C]

14. While turning the black gear [D], slowly move the pack left and right and pour half of the developer over the augur [E].

15. Continue to rotate the black gear until the developer is level.

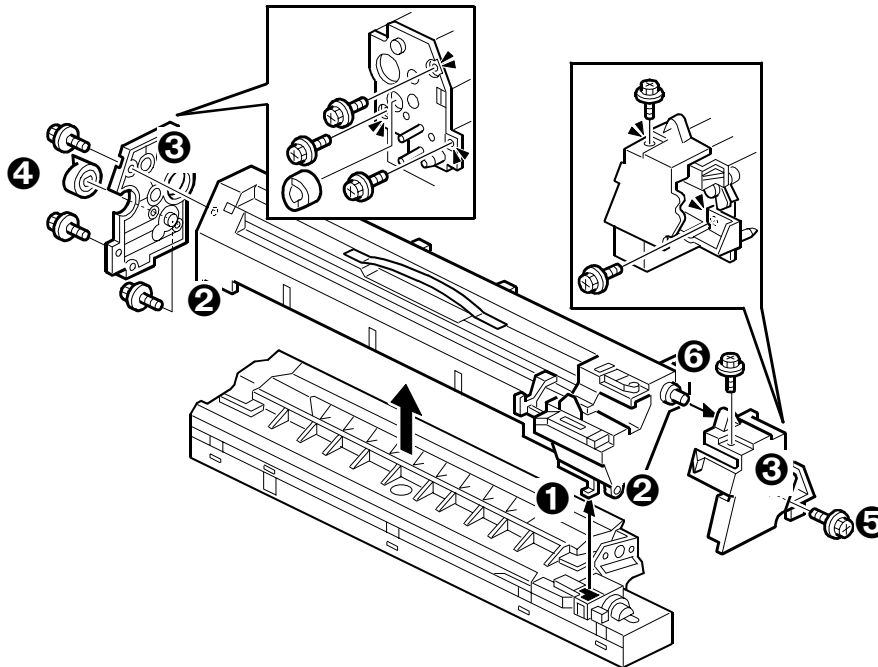
16. While continuing to turn the black gear, slowly move the pack left and right and pour the remaining half of the developer over the augur until the developer is level.



Important

- Be careful. Do not spill developer on the gears or sponges.
- If you accidentally spill developer on the gears or sponges, remove it with a magnet or the tip of a magnetized screwdriver.

PCU Reassembly

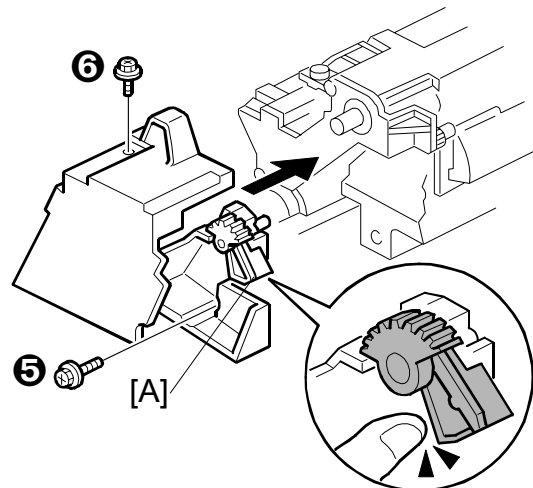


B205R926.WMFF

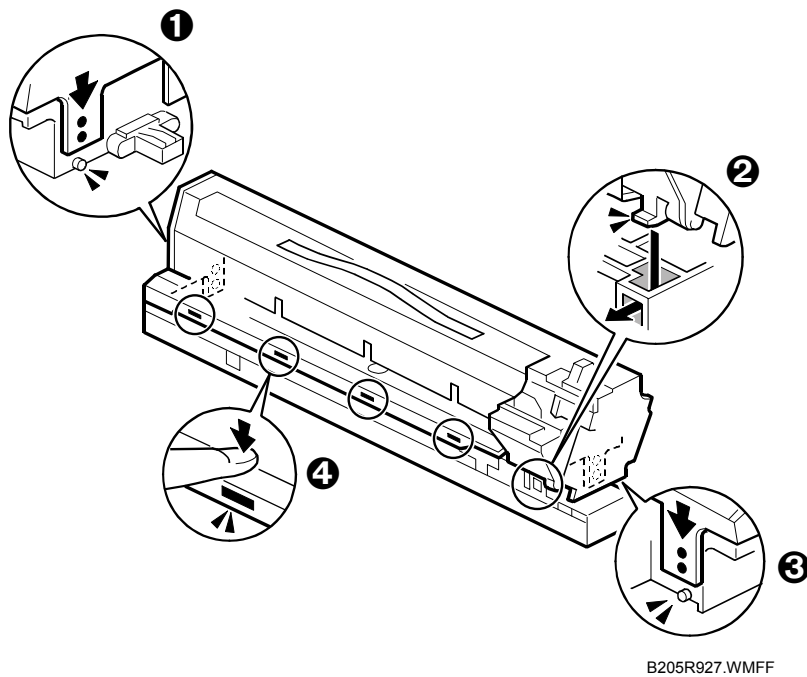
Replacement
Adjustment

Reassemble the PCU in this order:

- ❶ Connect pawl
- ❷ Frame pawls, front and rear
- ❸ Set rear cover, front cover
 - Never touch the lever [A] until after the top screw has been fastened.
- ❹ Screws (⌘ x3), coupling x1
 - Never press down on the top of the PCU when you reattach the rear or front cover.
- ❺ Lower screw (⌘ x1)
 - Always install the lower screw first to maintain the correct gap between the rollers.
- ❻ Top screw (⌘ x1)
 - Lift and lower the lever [A] to make sure that the shutter opens fully and operates smoothly.



B205R157.WMFF



1. Make sure that all of the holes and tabs on are engaged at **1**, **2**, **3**, and **4**. Then push down to lock the tabs on the front and rear end of the PCU.
2. Make sure that the holes for the screws on the front and rear end of the PCU are aligned correctly. If the holes are not aligned correctly, make sure that the tabs at the front, rear, and left side of the PCU are engaged correctly.

3.7.7 AFTER REPLACEMENT OF PCU COMPONENTS

Do this procedure after replacement of the PCU components and developer.

1. Assemble the PCU and install it in the machine.
2. Turn the machine on.



3. Go into the SP mode and do SP2801 (Developer Initialization).

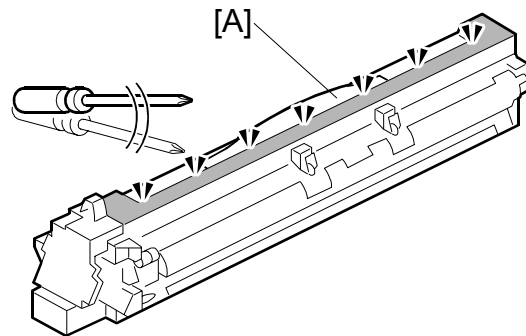
4. Make 5 sample copies.
5. Check the copies.

If the copies are clean (no black dots), the replacement is completed.

-or-

If you see black dots of toner that fell on the copies, go to the next step.

6. Remove the PCU from the machine.
7. Lightly tap the top of the PCU [A] with a screwdriver at 8 locations. These locations must be at equal intervals. Tap 2 or 3 times at each location, to make the toner fall into the development section.
8. Install the PCU in the machine.
9. Turn the machine on, and close the front door. After the machine turns the development roller for 10 seconds, go to the next step.



B205R928.WMFF

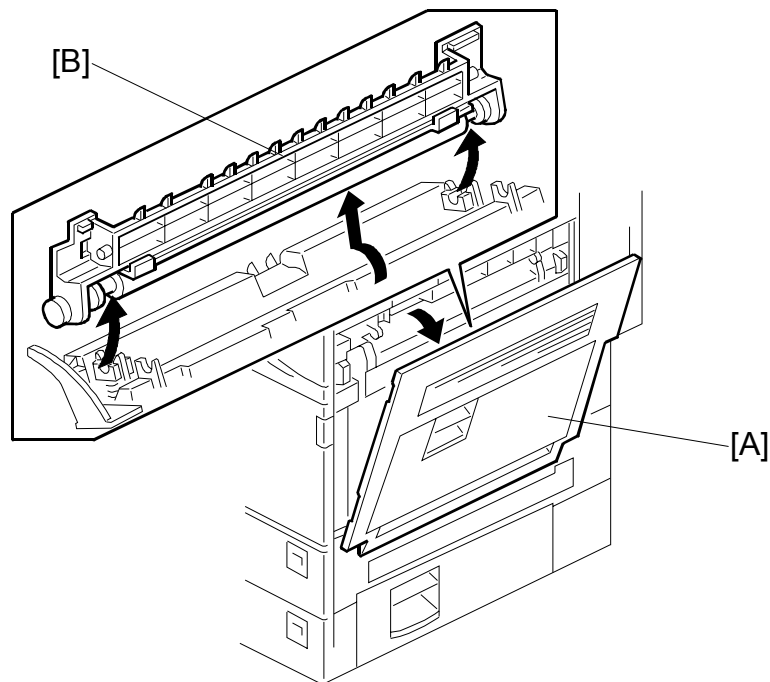
10. Open and close the door two more times. The total rotation time is 30 seconds.
11. If you replaced PCU components:
 - If A4/8½" x 11" paper is installed, make 4 copies/prints.
 - If A3/11" x 17" paper is installed, make 2 copies/prints.
 - To make solid black prints, use **SP2902 003 Pattern #8**.

NOTE: This step is not necessary if only the developer was replaced.

Replacement
Adjustment

3.8 TRANSFER UNIT

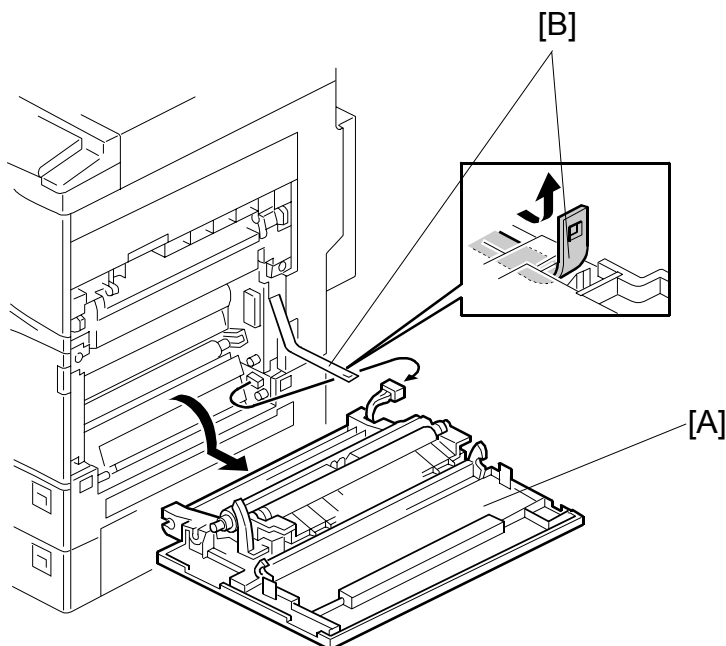
3.8.1 TRANSFER ROLLER UNIT



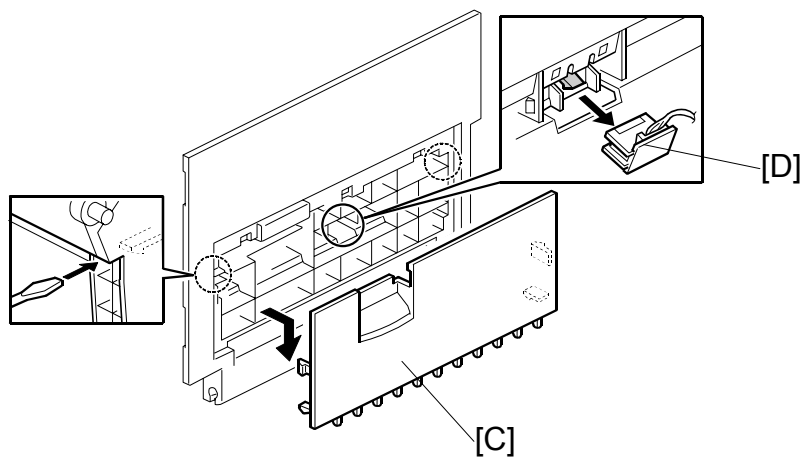
B205R929.WMF

1. Open the right cover [A].
2. Remove the transfer roller unit [B] (Hook x1).
NOTE: Do not touch the transfer roller surface.

3.8.2 IMAGE DENSITY SENSOR



B205R930.WMF



B205R931.WMF

1. Open the right cover [A].
2. Remove the unit band [B].
3. Remove the right cover [A] (⌘ x1),
4. Remove the sub right cover [C] (2 hooks).
5. Replace the image density sensor [D] (⌘ x1).
6. Initialize the new sensor with SP 2935.

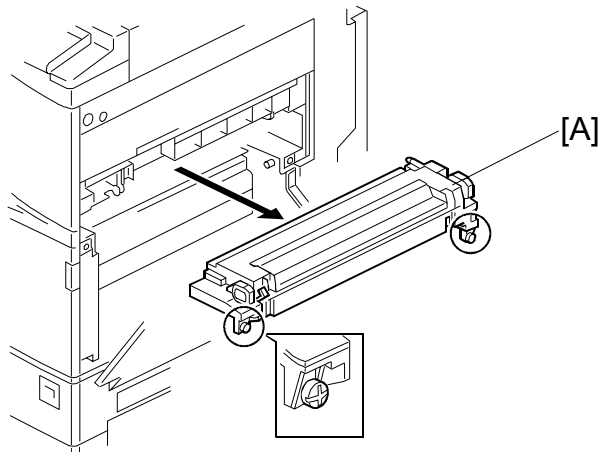
Replacement
Adjustment

3.9 FUSING/EXIT

3.9.1 FUSING UNIT

⚠ CAUTION

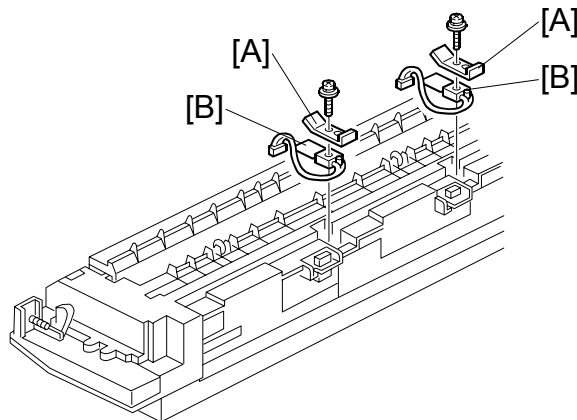
Allow time for the unit to cool before doing the following procedure.



B205R932.WMF

1. Release the duplex unit, if it has been installed, and open the right cover.
2. Remove the fusing unit [A] (⚙ x2).

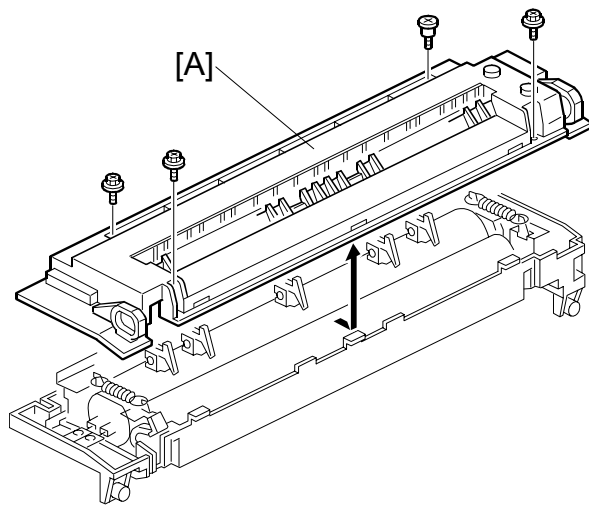
3.9.2 THERMISTORS



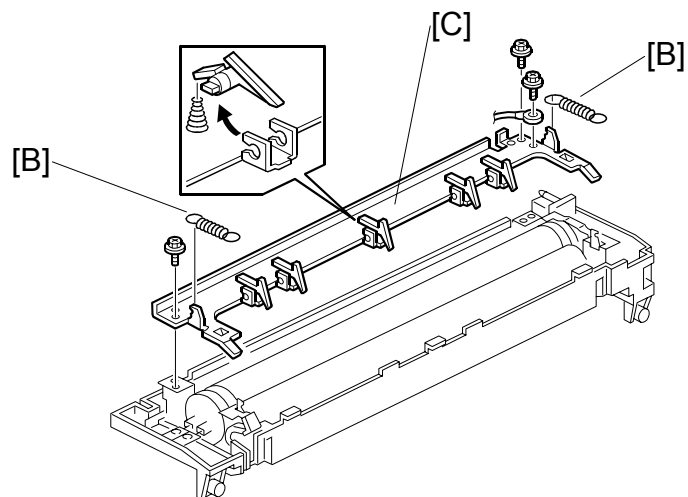
B205R933.WMF

1. Remove the fusing unit. (☞ 3.9.1).
2. Remove the plates [A] (⚙ x1 ea.).
3. Replace the thermistors [B] (🔌 x1).

3.9.3 THERMOSTATS

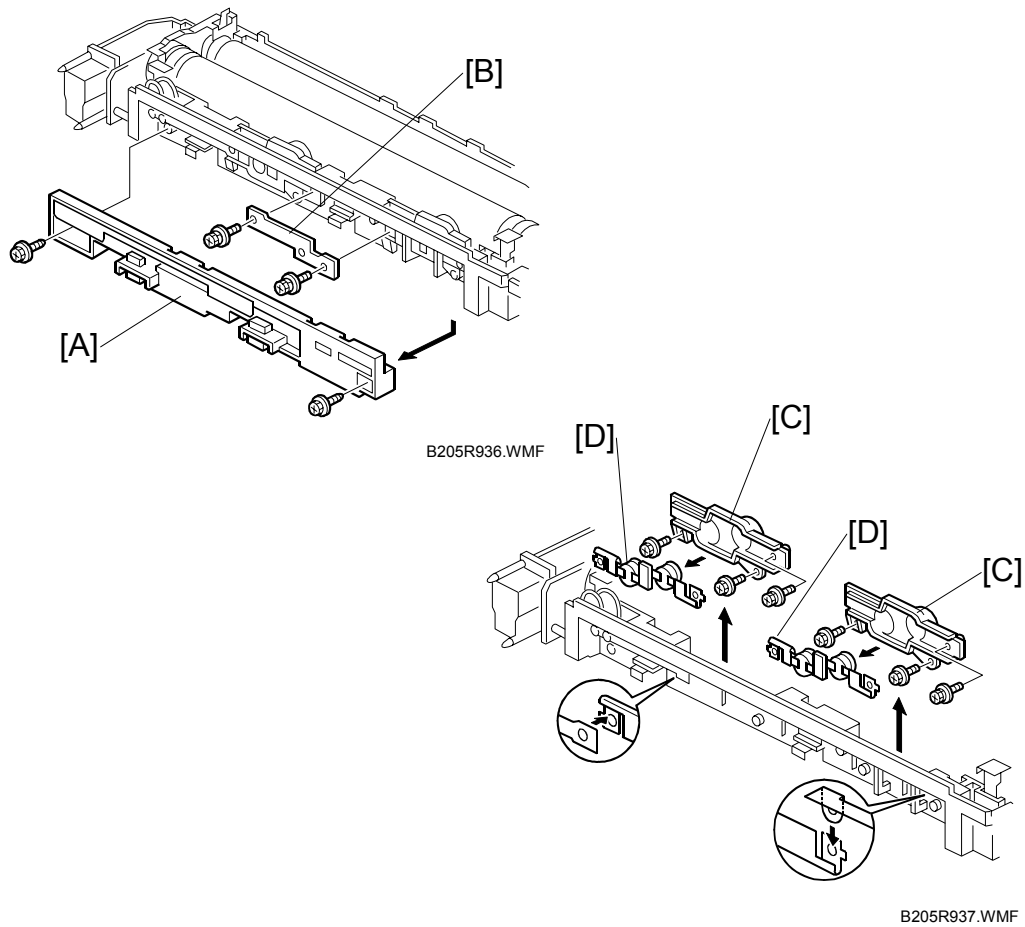


B205R934.WMF



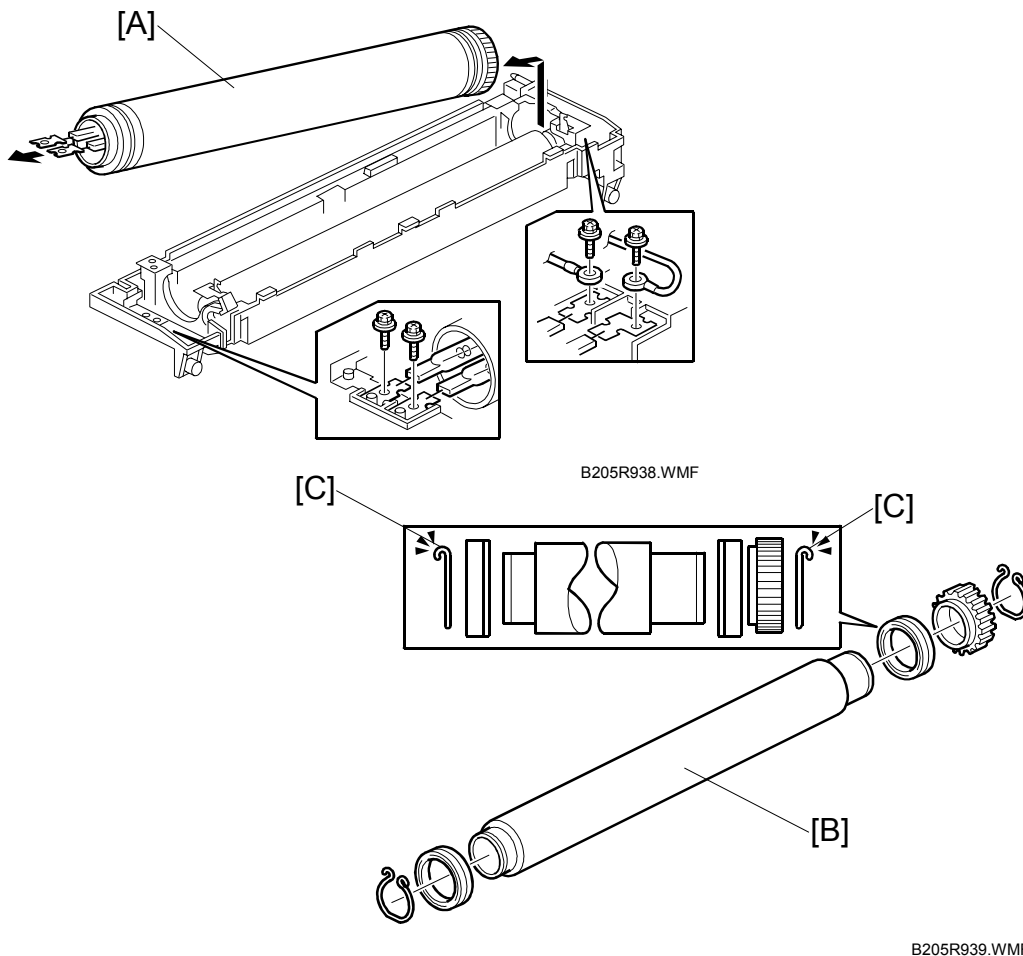
B205R935.WMF

1. Remove the fusing unit. (☛ 3.9.1)
2. Remove the fusing upper cover [A] (☛ x4).
3. Remove the pressure springs [B].
4. Remove the hot roller stripper bracket [C] (☛ x3).



5. Remove the thermostat cover [A] (Tapping $\frac{1}{8}$ x2).
6. Remove the plate [B] ($\frac{1}{8}$ x2, Spring washers).
7. Remove the thermostat holder [C] ($\frac{1}{8}$ x3 ea.).
8. Replace the thermostats [D].

3.9.4 HOT ROLLER AND FUSING LAMP



Replacement
Adjustment

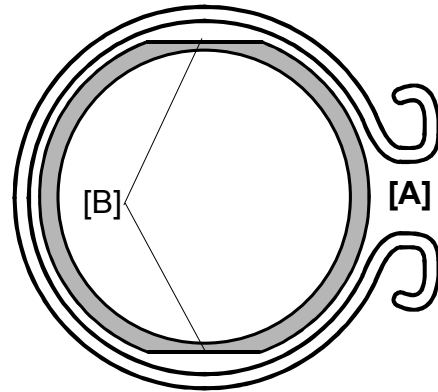
1. Remove the fusing unit. (➡ 3.9.1)
2. Remove: (➡ 3.9.3)
 - Fusing upper cover.
 - Pressure springs.
 - Hot roller stripper bracket.
3. Remove the fusing lamps (🔧 x4) and hot roller assembly [A].
NOTE: Do not touch the surface of the fusing lamp with bare hands.
4. Replace the hot roller [B] (C-rings x2, Gear x1, Bushings x2).

Reinstallation

- When you reattach the C-rings, the flat sides must face the bearing/roller. (The little hooks [C] must face away from the bearing/roller).

Reinstallation

1. At the rear (gear-side) attach the C-ring so that the opening [A] is 90 degrees from the D-cut sections [B] of the fusing roller.



B205R910.WMFF

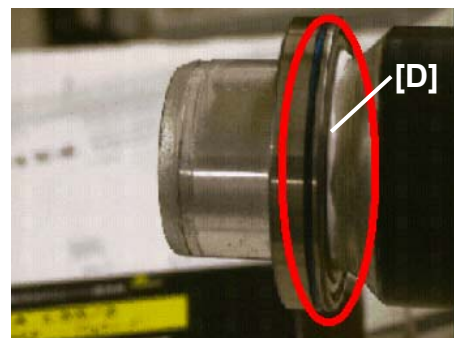
2. Apply enough grease at [C] so the metal surface is not visible.
3. The grease should be visible after reattaching the bushing [D].

Important

- Before installing the new hot roller, peel off 3 cm (1 inch) from both ends of the protective sheet on the new roller.
- Do not touch the surface of the rollers.
- When reinstalling the fusing lamp, secure the front screws first.
- Be careful not to damage the surface of the hot roller.

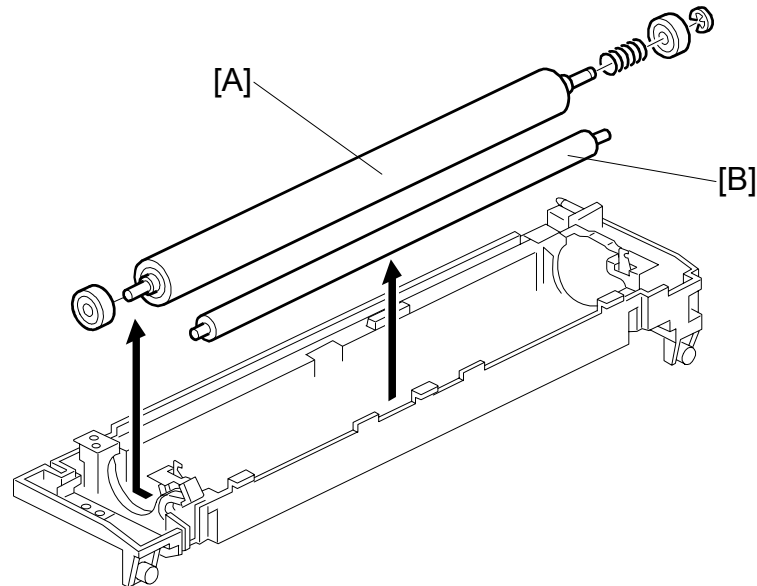


RB022025A.BMP



RB022025B.BMP

3.9.5 PRESSURE ROLLER/CLEANING ROLLER



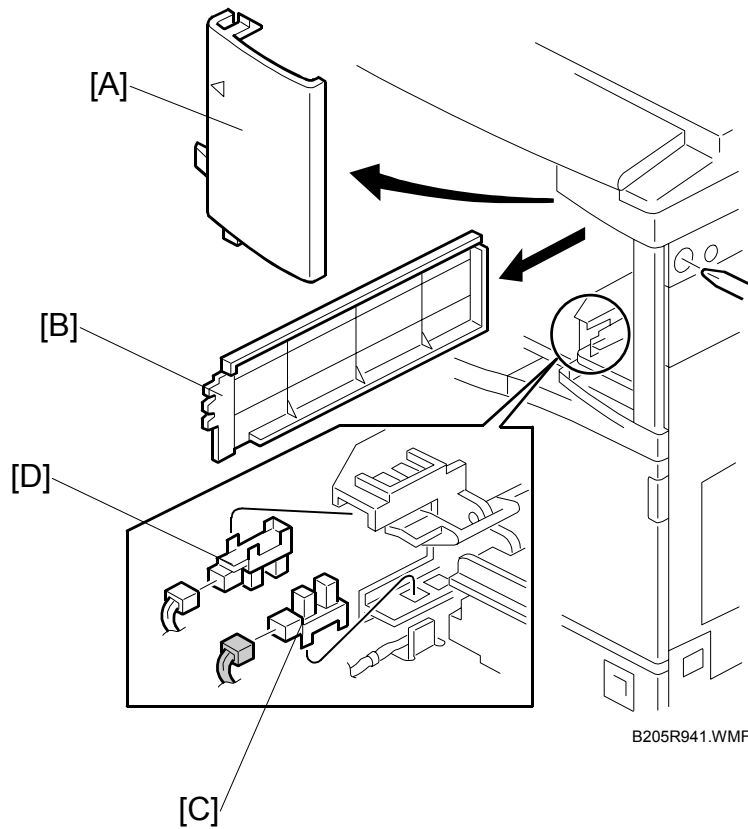
B205R940.WMF

1. Remove the fusing lamp and hot roller assembly. (➡3.9.4)
2. Replace the pressure roller [A] (⌚ x1, Bushings x2, Spring x1).
3. Replace the cleaning roller [B].

NOTE: 1) Apply grease (Barrierta) to the inner surface of the bushing for the pressure roller.
2) Do not touch the surface of the rollers.

Replacement
Adjustment

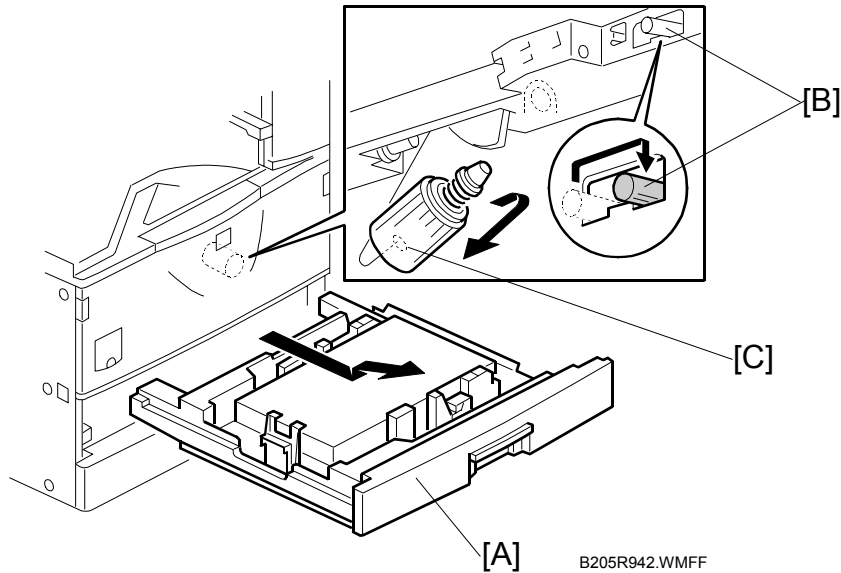
3.9.6 PAPER EXIT SENSOR/PAPER OVERFLOW SENSOR



1. Remove the front upper cover [A] (⚙ x1, Peg x1).
2. Remove the exit cover [B].
NOTE: If the optional 1 bin tray unit and/or interchange unit have been installed, remove them.
3. Replace the exit sensor [C] (🔌 x1).
4. Replace the overflow sensor [D] (🔌 x1).

3.10 PAPER FEED

3.10.1 FEED ROLLER: TRAY 1

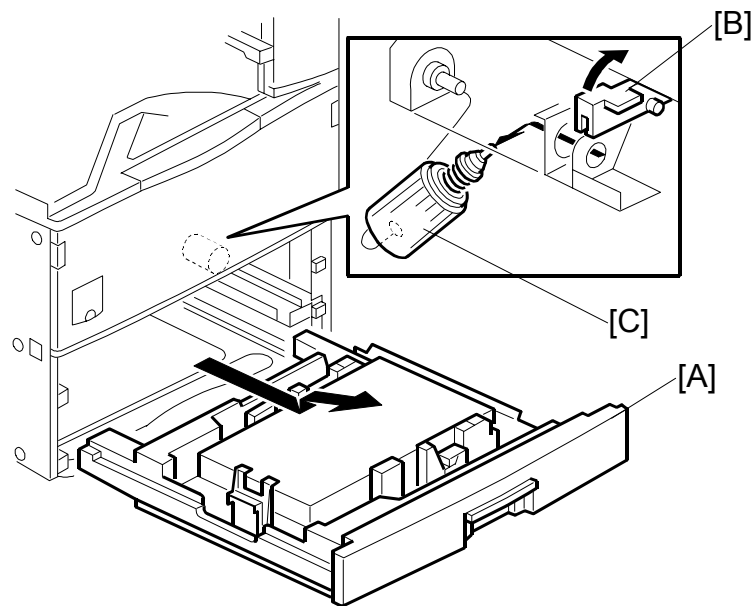


Replacement
Adjustment

1. Remove the paper tray [A].
2. Pull the lever [B].
3. Replace the feed roller [C].

NOTE: Do not touch the roller surface with bare hands. After reinstalling the feed roller, return the lever [B].

3.10.2 FEED ROLLER: TRAY 2

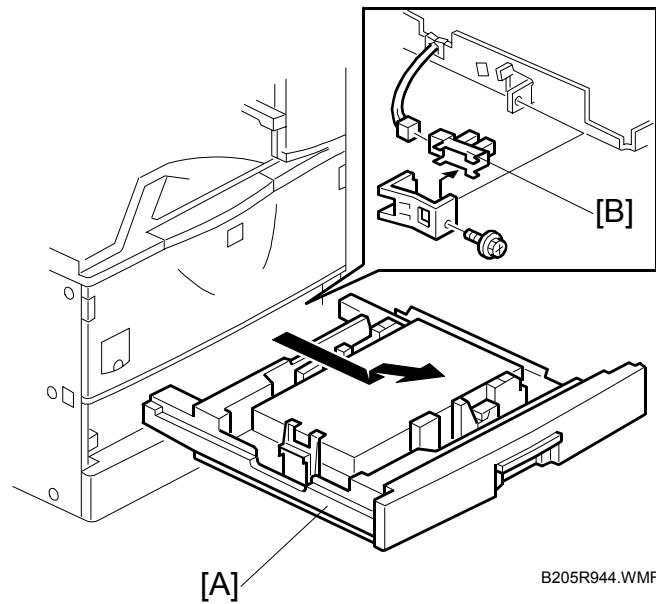


B205R943.WMFF

1. Remove the first paper tray.
2. Remove the second paper tray [A].
3. Raise the white Teflon lever [B] to release the roller.
4. Replace the feed roller [C].

NOTE: Do not touch the roller surface with bare hands. After reinstalling the feed roller, reset the lever [B].

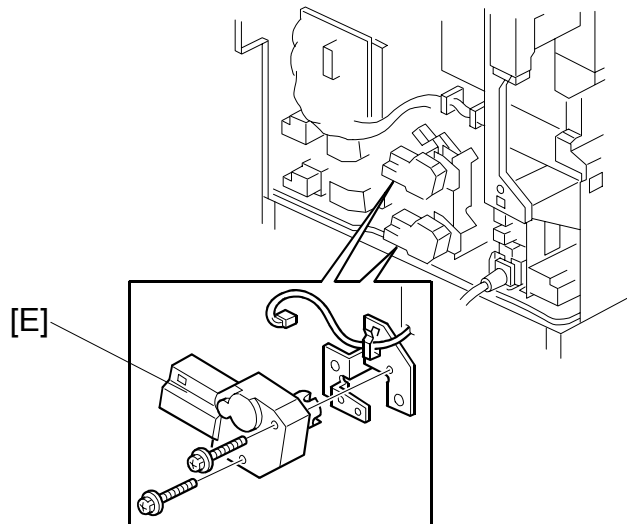
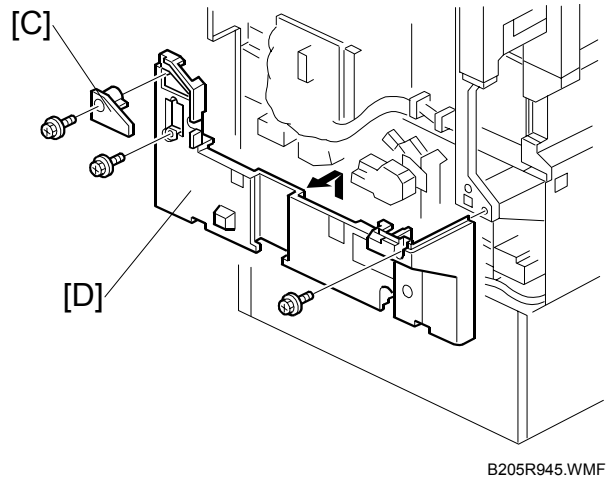
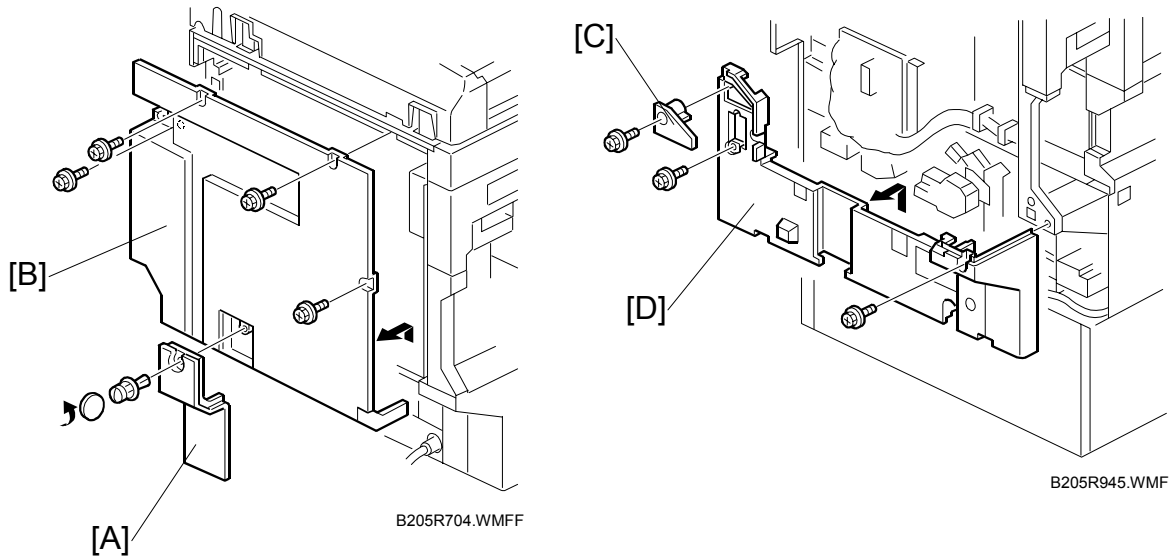
3.10.3 PAPER END SENSOR



Replacement
Adjustment

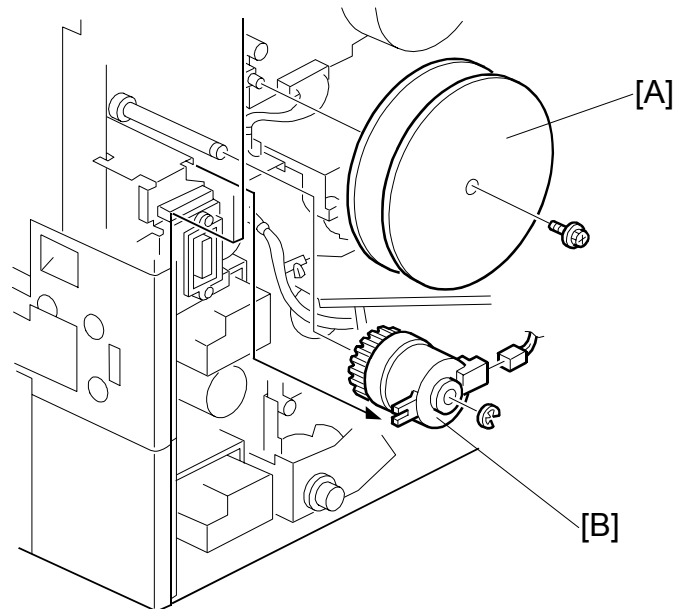
1. Remove the paper tray [A].
2. Remove the paper end sensor assembly (⚙ x1, 📄 x1).
3. Replace the paper end sensor [B].

3.10.4 PAPER TRAY LIFT MOTORS



1. Remove the paper tray.
2. Remove the connector cover [A] (⚙ x1) and disconnect the cable.
3. Remove the rear cover [B] (⚙ x4).
4. Remove the duplex connector cover [C] (⚙ x1).
5. Remove the lower rear cover [D] (⚙ x2).
6. Replace the paper lift motors [E] (⚙ x2 ea., 📁 x1 ea.).

3.10.5 REGISTRATION CLUTCH

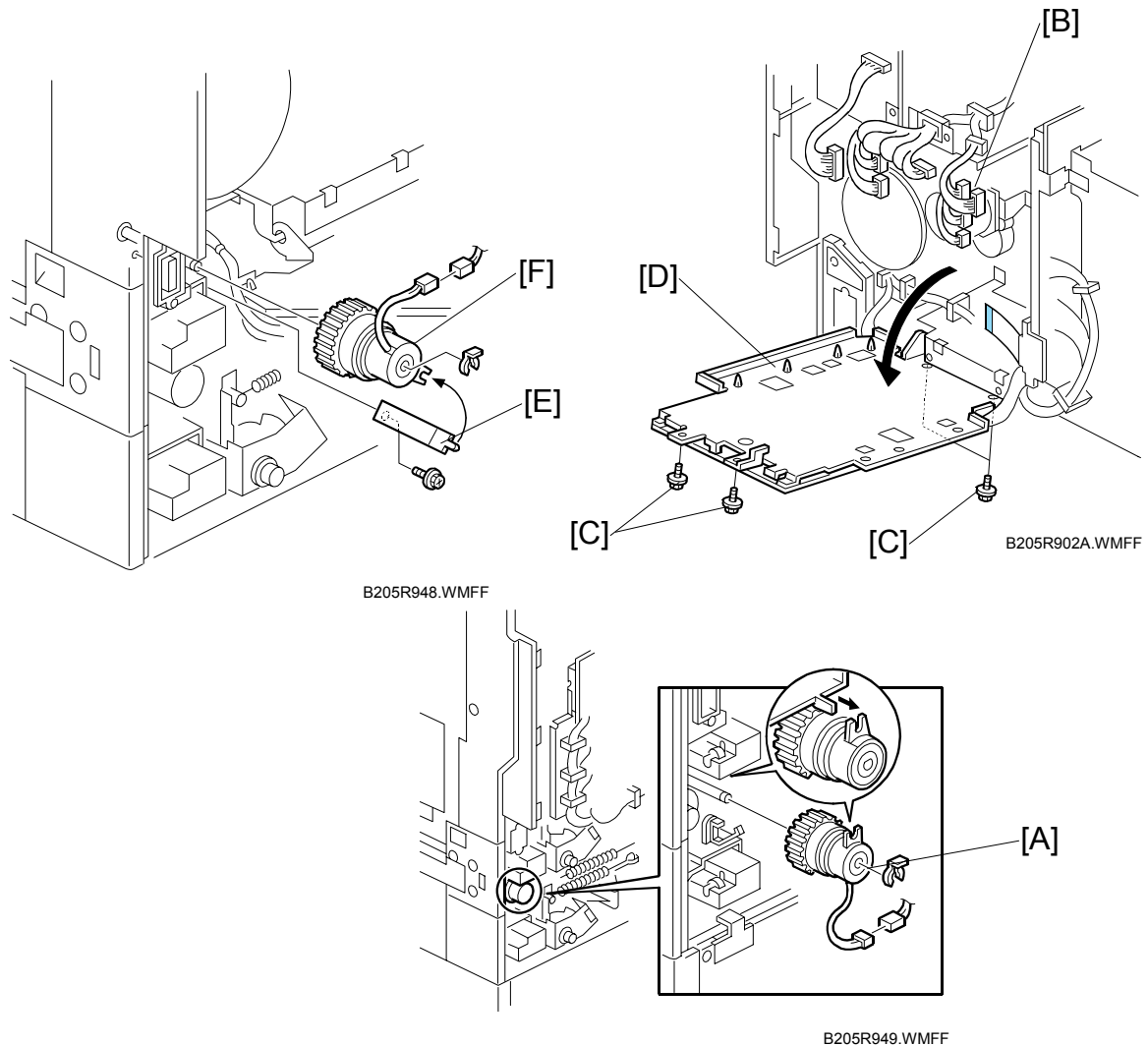


B205R947.WMF

Replacement
Adjustment

1. Remove the connector cover and the rear cover. (☛3.10.4)
2. Remove the duplex connector cover and lower rear cover. (☛3.10.4)
3. Remove the fly wheels [A] (⚙ x1).
4. Remove the registration clutch [B] (⚙ x1, ⚙ x1).

3.10.6 PAPER FEED CLUTCHES



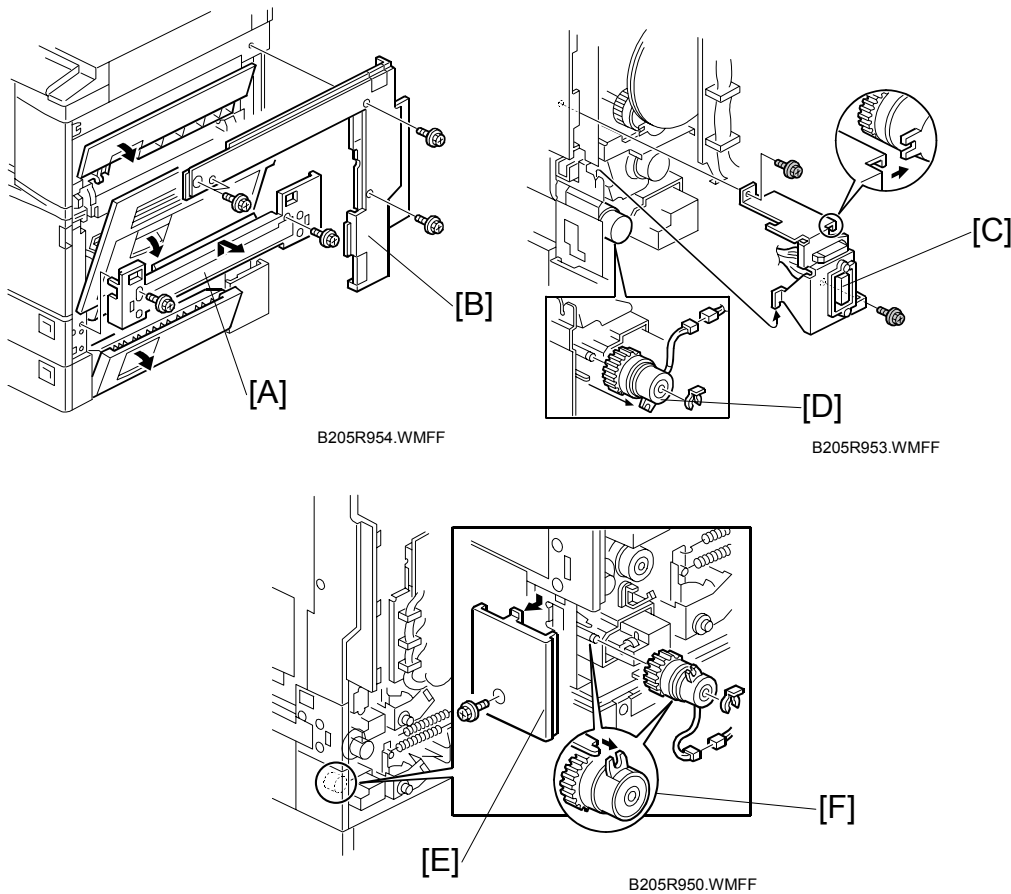
Lower Paper Feed Clutch

1. Remove the rear cover.
2. Remove the lower rear cover.
3. Replace the lower paper feed clutch [A] (⌚ x 1, ⌚ x 1).

Upper Paper Feed Clutch.

4. Disconnect the connectors [B] for the SBCU board as shown (⌚ x15).
5. Remove 4 screws [C] securing the SBCU board bracket then swing down the SBCU board bracket [D].
6. Remove the bracket [E] (⌚ x1).
7. Replace the upper paper feed clutch [F] (⌚ x 1, ⌚ x 1).

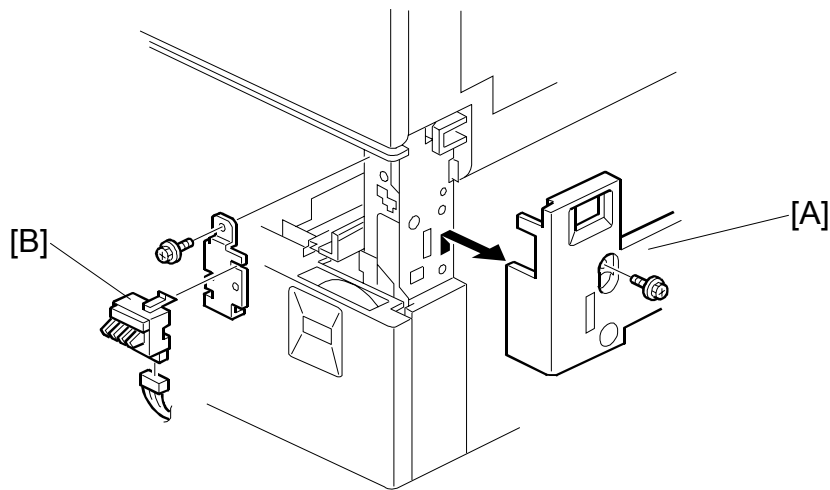
3.10.7 RELAY CLUTCHES



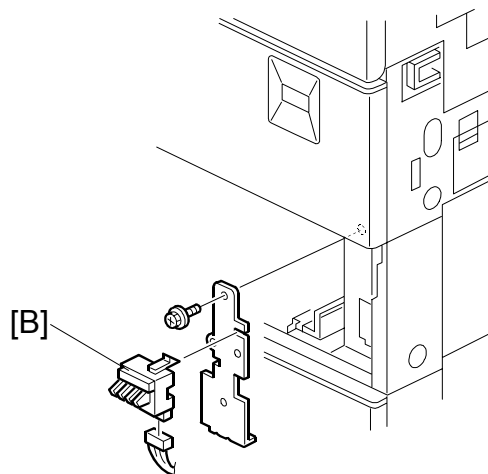
Replacement
Adjustment

1. Remove the optional duplex unit and/or by-pass tray unit if they have been installed.
2. Remove the rear cover and lower rear cover.
3. Remove the lower right cover [A] (⚙️ x2).
4. Remove the scanner right cover.
5. Remove the right cover [B] (⚙️ x4).
6. Swing down the SBCU board bracket.
7. Remove the connector bracket [C] (⚙️ x 2).
8. Replace the upper relay clutch [D] (⚙️ x 1, ⚙️ x 1).
9. Remove the right rear cover [E] (⚙️ x1).
10. Replace the lower relay clutch [F] (⚙️ x 1, ⚙️ x 1).

3.10.8 PAPER SIZE DETECTOR



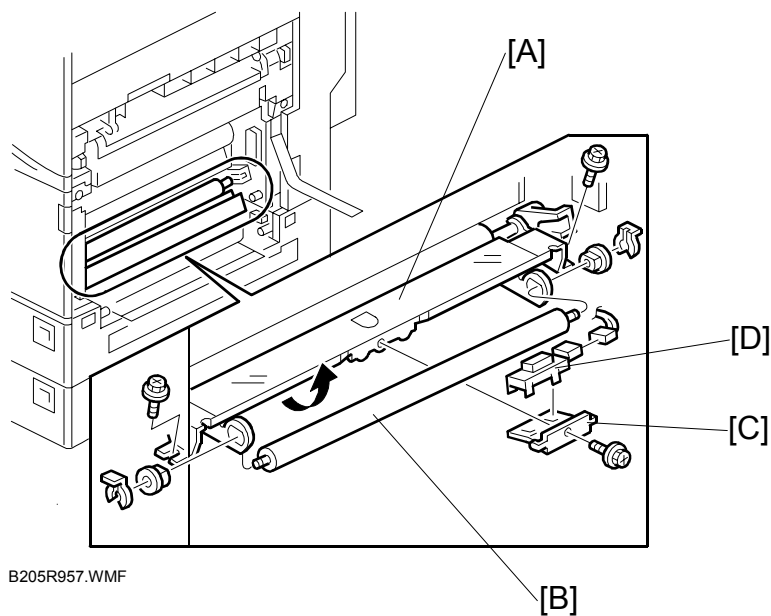
B205R955.WMF



B205R956.WMF

1. Remove the right lower cover [A]. (☞3.10.7)
2. Remove the paper trays.
3. Remove the paper size detector assembly (🔧 x1 ea.).
4. Replace the paper size detectors [B] (🔧 x1 ea.).

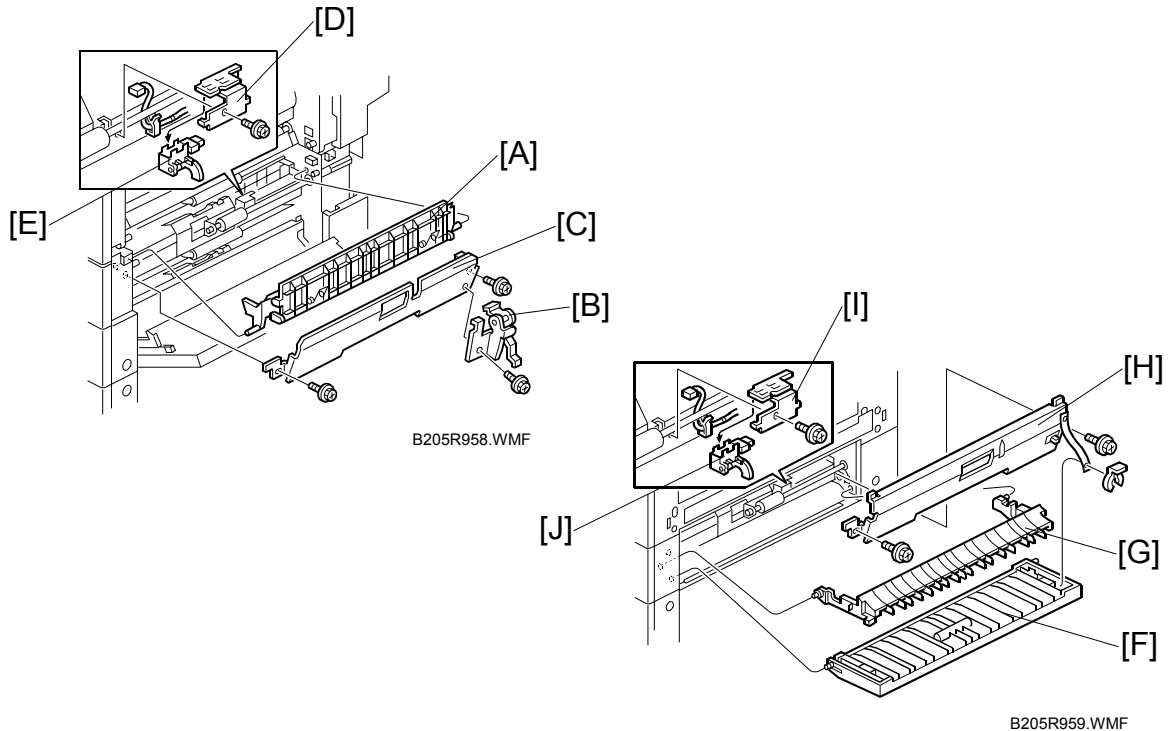
3.10.9 REGISTRATION SENSOR



1. Remove the right cover. (➡3.8.2)
2. Remove the registration guide plate [A] (⚙️ x2).
3. Remove the paper support roller [B] (2 snap rings, 2 bushings).
4. Remove the sensor bracket [C] (⚙️ x1).
5. Replace the registration sensor [D] (🔌 x1).

Replacement
Adjustment

3.10.10 RELAY SENSORS



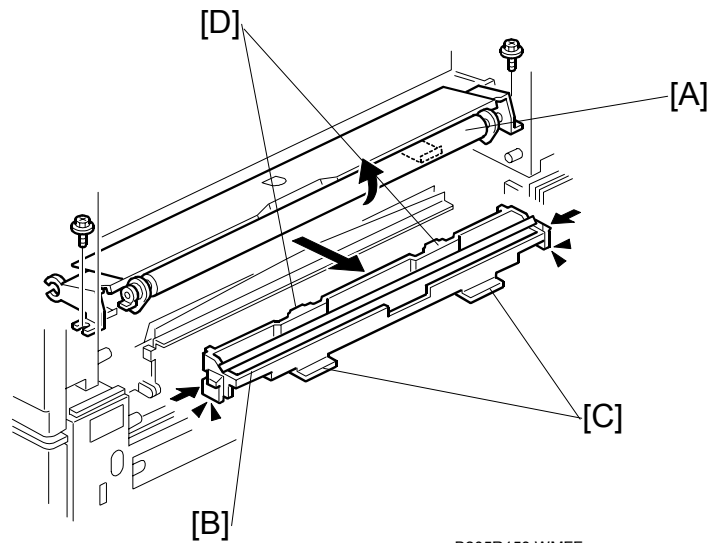
Upper Relay Sensor

1. Remove the right cover. (➡3.8.2)
2. Remove the lower right cover. (➡3.10.7)
3. Remove the guide plate [A].
4. Remove the bracket [B] (⚙ x1).
5. Remove the guide plate [C] (⚙ x2).
6. Remove the sensor bracket [D] (⚙ x1).
7. Replace the upper relay sensor [E] (🔌 x1).

Lower Relay Sensor

1. Remove the right lower door [F] (1 clip).
2. Remove the guide plate [G].
3. Remove the guide plate [H] (⚙ x2).
4. Remove the sensor bracket [I] (⚙ x1).
5. Replace the lower relay sensor [J] (🔌 x1).

3.10.11 DUST COLLECTION BOX



B205R158.WMFF

Replacement
Adjustment

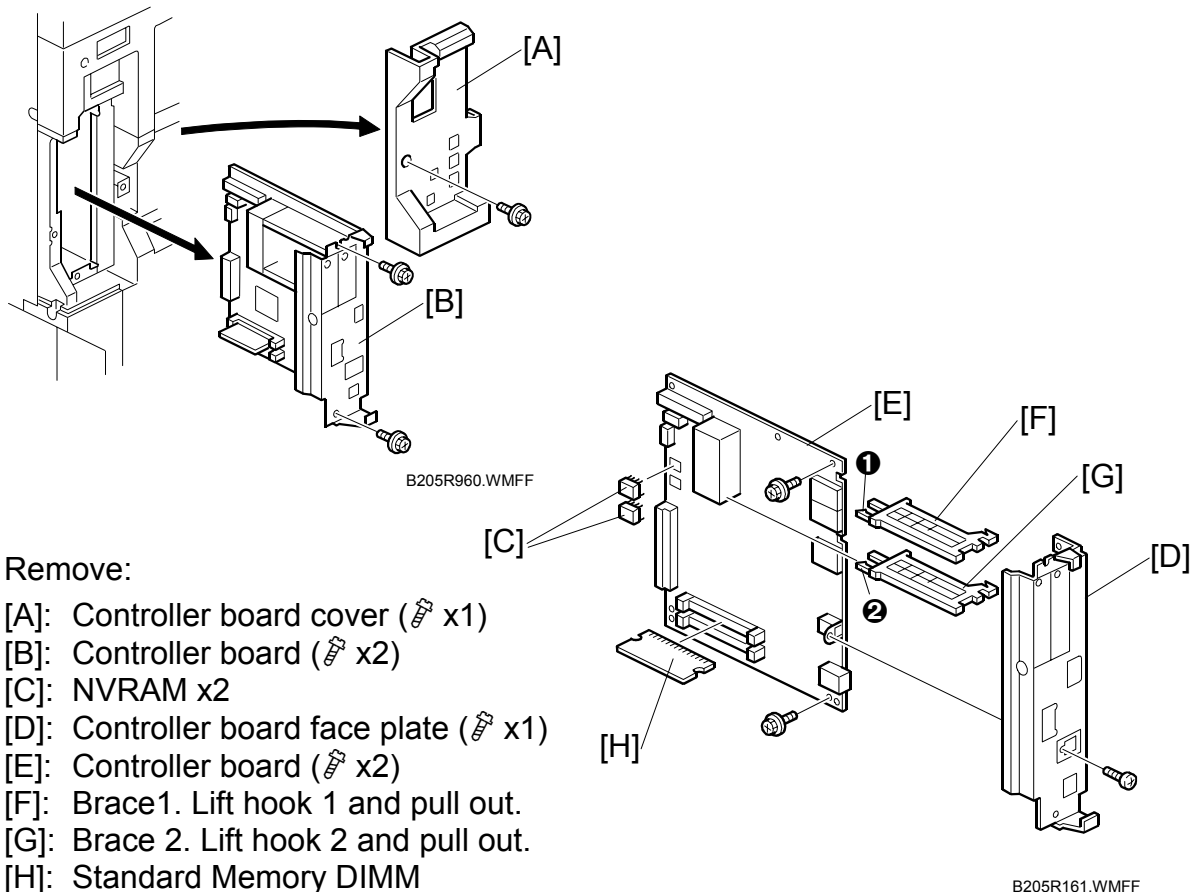
1. Remove:
 - PCU (➡ 3.7.1)
 - Right cover (➡ 3.8.2)
2. Disconnect the sponge roller assembly [A] (⚙ x2) and lift it.
3. While you hold the roller assembly up, push in both ends of the dust collection bin [B] and remove the bin.
4. Tap the dust collection bin above a sheet of paper, to remove the paper dust.
5. Use a dry cloth to clean the inside of the dust collection bin.

Reinstallation

- Make sure that the two tabs with ridges [C] are towards you when you install the dust collection bin.
- Insert the "A"-shaped tabs [D] on the rear of the dust collection box into the square grooves (not shown in the diagram). Turn the unit upwards to lock the unit in position. You will hear a click after the unit is installed correctly.
- If the dust collection bin is not installed correctly, the dust collection bin will not lock in its position and the sponge roller assembly will not lower fully.

3.11 PCBS AND OTHER ITEMS

3.11.1 CONTROLLER BOARD



Important:

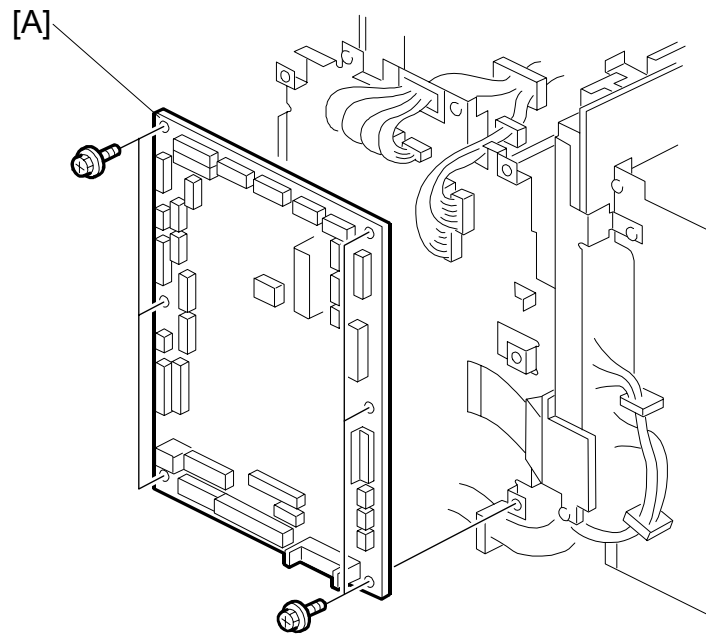
- Take the NVRAMs from the old board and install them on the new board.
- Do not remove the NVRAM until after you upload its contents (➡3.11.2).
- Always touch a metal surface to discharge static on your hands before you touch the controller board.
- Work carefully when you remove the NVRAMs, to prevent damage to other components on the controller board. Do not short-circuit the pins of other chips.
- NVRAM chips must always be removed and replaced as a pair.
- Set the DIP switches on the new controller board to the same settings as the old board.

3.11.2 NVRAM

The following data cannot be downloaded from the SD card.

- Total count categories (SP7002*** Copy Counter)
 - C/O, P/O Counter (SP7006*** C/O, P/O Count Display)
 - Duplex, A3/DLT/Over 420 mm, Staple and Scanner application scanning counters (system settings).
1. Do SP5990 001 to print the SMC report.
 2. Turn off the main switch.
 3. Remove the controller board cover (🔧 x1).
 4. Put the SD card in SD card slot **C3**.
 5. Turn on the main switch.
 6. Do SP5824.
 7. Touch “Execute” to start to upload the NVRAM data.
 8. Turn off the main switch and remove the SD card.
 9. Remove the controller board (🔧 x1). (➡3.11.1)
 10. Remove the NVRAM (x2) and replace them with the new chips. (➡3.11.1)
NOTE: Both NVRAM chips must be replaced.
 11. Install the controller board.
 12. Put the SD card with the NVRAM data in SD card slot **C3**.
 13. Turn on the machine.
 14. Do SP5801 to initialize the new NVRAM.
 15. To download the NVRAM data from the SD card in **C3**, do SP5825.
 16. Touch “Execute” to start to download the NVRAM data.
 17. Turn off the main switch and remove the SD card.
 18. Turn on the machine.
 19. Do SP5990 001 to print another SMC report.
 20. Compare this new SMC report with the report you printed in Step 1. If any of the SP settings are different, input the SP settings of the first report.
 21. Do SP5907 and input the brand and model name of the machine for Windows Plug & Play capability.

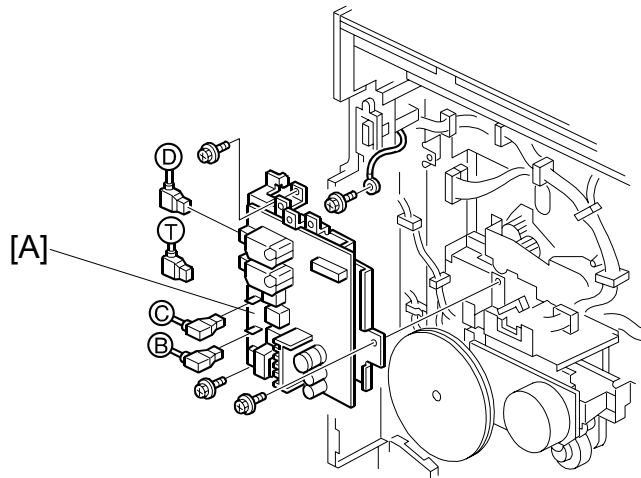
3.11.3 SBCU BOARD



B205R708.WMFF

1. Remove the rear cover. (☛3.10.4)
2. Remove the SBCU board [A] (☛ x All, ☛ x6).
3. Set the DIP switches on the new SBCU board to the same settings as the old board.

3.11.4 POWER PACK

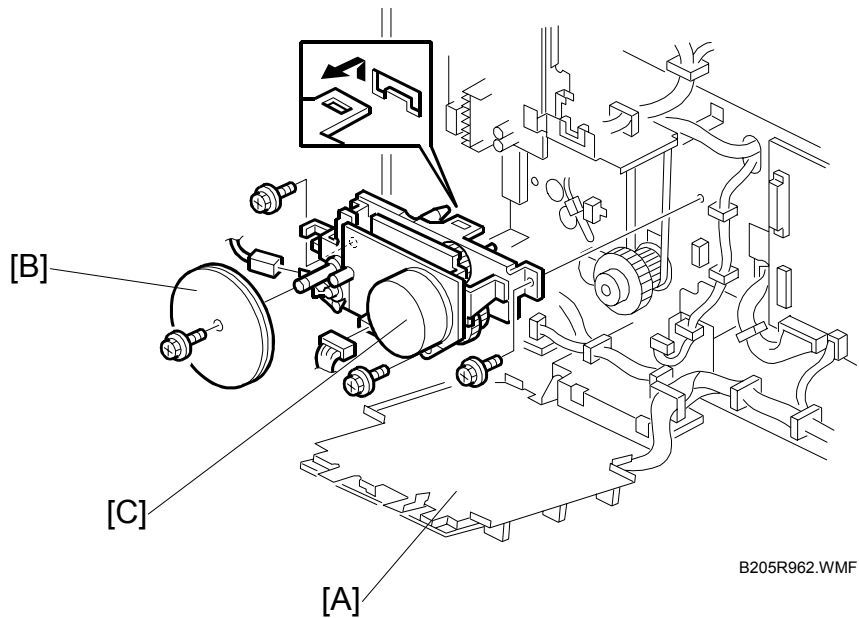


B205R961.WMF

1. Remove the rear cover. (☛0)
2. Swing down the SBCU board bracket. (☛3.10.6)
3. Remove the power pack [A] (☛ x 5, ☛ x3).

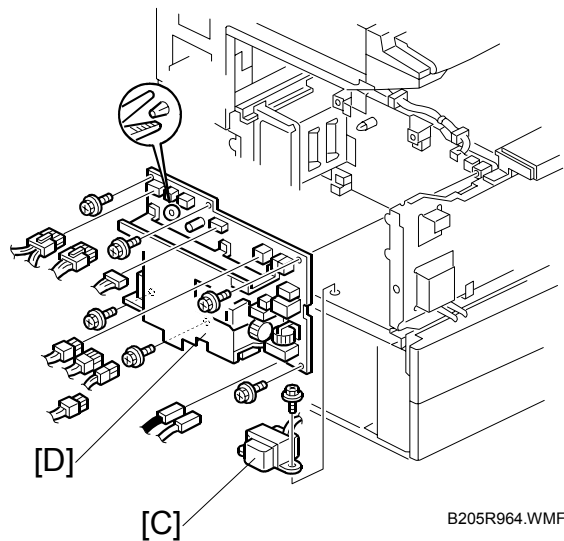
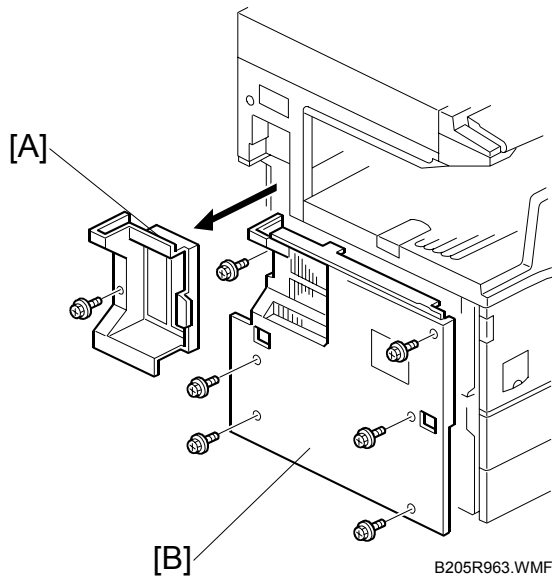
Replacement
Adjustment

3.11.5 MAIN MOTOR



1. Remove the rear cover. (☛3.10.4)
2. Swing down the SBCU board bracket. (☛3.10.6)
3. Remove the fly wheels [B] (🔧 x1).
4. Replace the main motor [C] (🔧 x2, 🔧 x3).

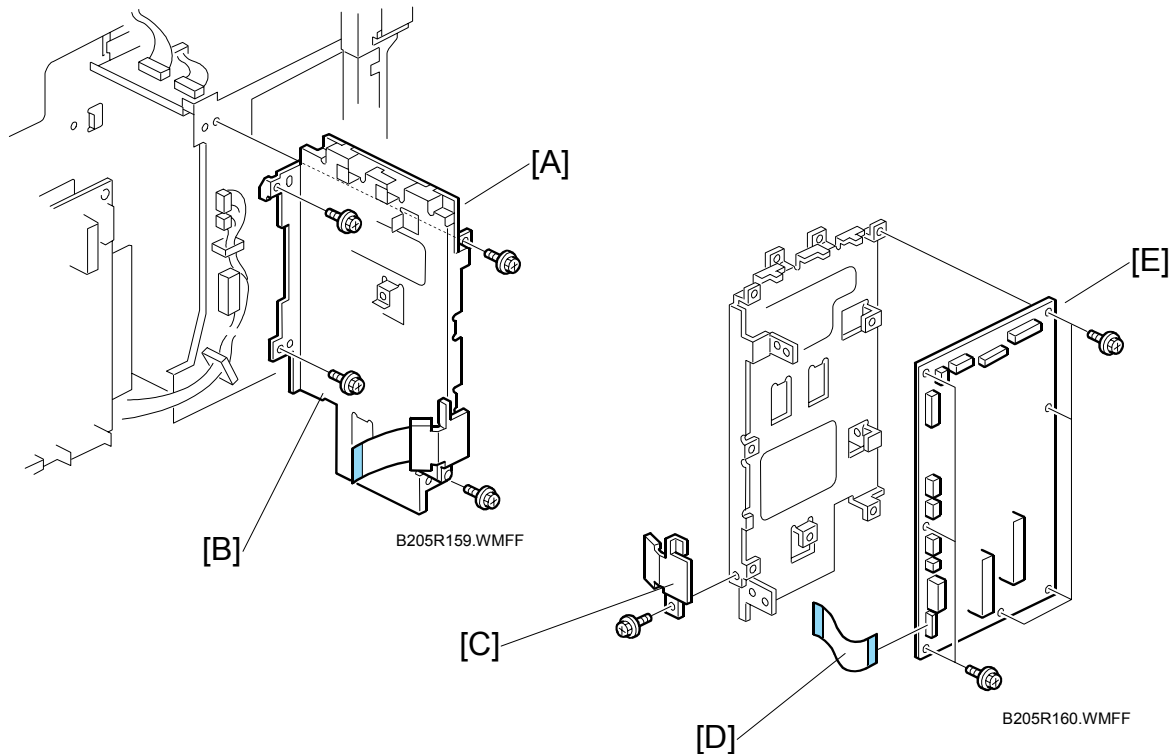
3.11.6 PSU



Replacement
Adjustment

1. Remove the optional finisher if it has been installed.
2. Remove the application cover [A] (⚙ x1).
3. Remove the left cover [B] (⚙ x6).
NOTE: For the 220 V machine only, remove the transformer [C] (⚙ x1).
4. Remove the PSU [D] (🔌 x all, ⚙ x6, Clip x1).

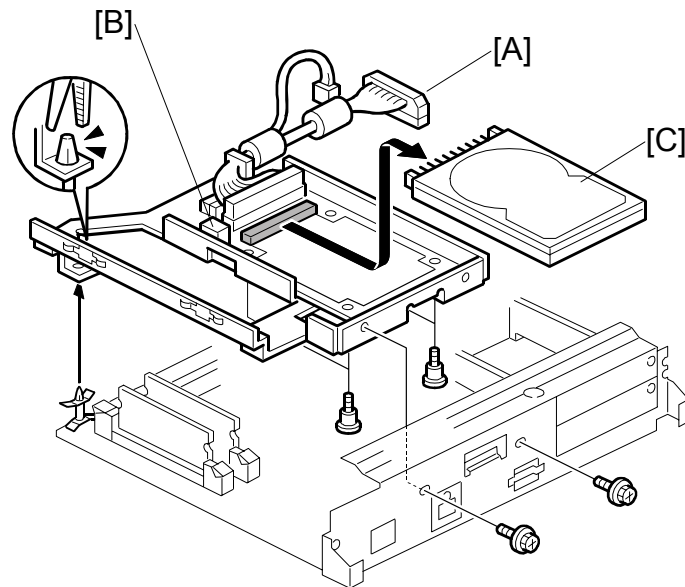
3.11.7 IPU



1. Remove: (☛3.11.1)
 - Controller board plastic cover (☛ x1).
 - Controller front plate screws (☛ x2).
2. Remove: (☛3.10.4)
 - Paper tray unit connector cover (☛ x1)
 - Disconnect the paper tray unit (if it is installed) (☛ x1)
 - Rear cover (☛ x1).
3. Pull the controller board partially out of the left slot to disconnect it from the IPU.
4. If the FCU is installed, pull it partially out of the right slot (☛ x2).

NOTE: Do not remove the controller or FCU fully. Only pull them out a sufficient distance to disconnect them from the IPU board.
5. Disconnect the IPU board [A] (☛ x2, Metal clamps x2, ☛ x6)
6. Remove the IPU bracket [B] with the IPU board attached (☛ x4, FFC x1).
7. Remove the flat film connector protection plate [C] from the bracket.
8. Remove the flat film connector [D] from the IPU.
9. Remove the IPU board [E] from the bracket (☛ x7).

3.11.8 HDD



B205R965.WMFF

 Replacement
Adjustment

Before you replace the HDD:

- Put an SD card in SD card slot **C3**.
- Go into the SP mode.
- Do **SP5846 51** to upload the address book data to the SD card.

Important: If the HDD is damaged, you may not be able to retrieve this data from the HDD.

1. Remove the controller board. (➡3.11.1)
2. Disconnect the HDD harness [A].
3. Disconnect the AC harness [B]
4. Remove the HDD unit (⚙ x2, Standoffs x2)
NOTE: It is not necessary to format the new hard disk after installation.
5. Remove the HDD [C] from the bracket (⚙ x4)
6. After you install the new HDD, do **SP5853** to copy the preset stamp data from the firmware to the hard disk. Then turn the main power switch off/on.
7. If you successfully retrieved the address book data from the HDD with **SP5846 51**, do **SP5846 52** to restore the address book data to the HDD.

Important Notes About HDD Replacement

- Never remove an HDD unit from the work site without the consent of the client.
- If the customer has concerns about the security of information on the HDD, the HDD must remain with the customer for disposal or safe keeping.
- The HDD may contain proprietary or classified (Confidential, Secret) information. Specifically, the HDD contains document server documents and data stored in temporary files created automatically during copy job sorting and jam recovery. Such data is stored on the HDD in a special format, so it cannot normally be read but can be recovered with illegal methods.
- If the customer is using the Data Overwrite Security feature, the DOS function must be set up again.

3.12 COPY ADJUSTMENTS: PRINTING/SCANNING

NOTE: 1) You need to perform these adjustment(s) after replacing any of the following parts:

- Scanner Wire
- Lens Block/SBU Assembly
- Scanner Drive Motor
- Polygon Mirror Motor
- Paper Side Fence
- Memory All Clear

2) For more details about accessing SP modes, refer to section 4.

3.12.1 PRINTING

NOTE: 1) Make sure the paper is installed correctly in each paper tray before you start these adjustments.

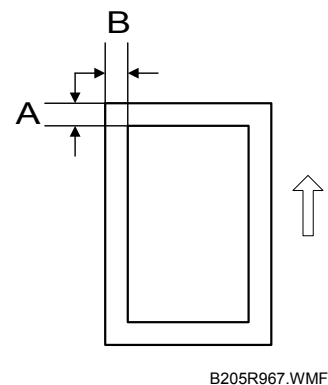
2) Use the Trimming Area Pattern (SP2-902-3, No.10) to print the test pattern for the following procedures.

3) Set SP 2-902-3 to 0 again after completing these printing adjustments.

Registration - Leading Edge/Side-to-Side

1. Check the leading edge registration for each paper feed station, and adjust them using SP1-001.
2. Check the side-to-side registration for each paper feed station, and adjust them using SP1-002.

Tray	SP mode	Specification
Any paper tray	SP1-001-1	3 ± 2 mm
By-pass feed	SP1-001-2	
Duplex	SP1-001-3	
1st paper feed	SP1-002-1	2 ± 1.5 mm
2nd paper feed	SP1-002-2	
3rd paper feed (Optional PFU tray 1), or LCT	SP1-002-3	
4th paper feed (Optional PFU tray 2)	SP1-002-4	
By-pass feed	SP1-002-5	
Duplex, side 2	SP1-002-6	



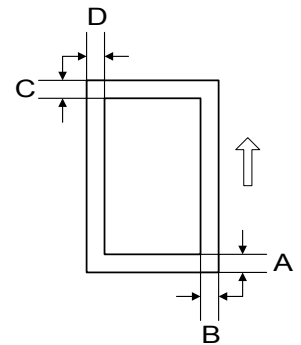
A: Leading Edge Registration
B: Side-to-side Registration

Blank Margin

NOTE: If the leading edge/side-to-side registration cannot be adjusted within the specifications, adjust the leading/left side blank margin.

1. Check the trailing edge and right side edge blank margins, and adjust them using the following SP modes.

	SP mode	Specification
Trailing edge	SP2-101-2/3/4	3 ± 2 mm
Right edge	SP2-101-6	$2 +2.5/-1.5$ mm
Leading edge	SP2-101-1	3 ± 2 mm
Left edge	SP2-101-5	2 ± 1.5 mm
Trailing edge (duplex copy, 2nd side)	SP2-101-7	2 ± 2 mm
Left edge (duplex copy, 2nd side)	SP2-101-8	2 ± 1.5 mm
Right edge (duplex copy, 2nd side)	SP2-101-9	$2 +2.5/-1.5$ mm



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A: Trailing Edge Blank Margin
 B: Right Edge Blank Margin
 C: Leading Edge Blank Margin
 D: Left Edge Blank Margin

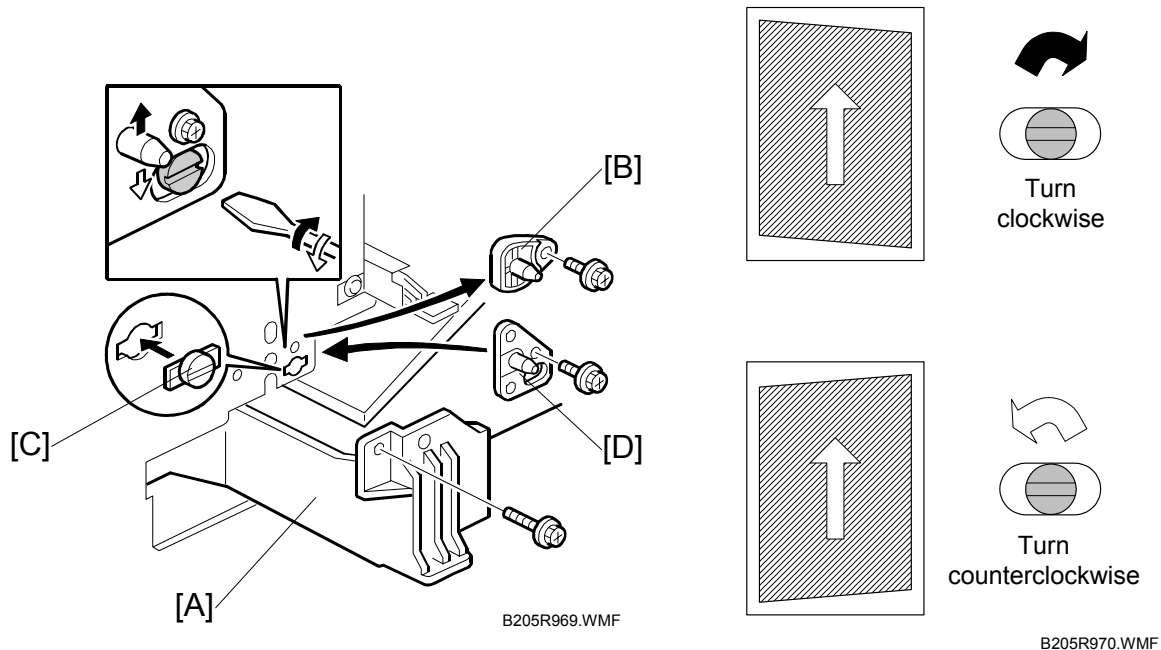
Main Scan Magnification

1. Print the single-dot grid pattern (SP2-902, no.5).
2. Check the magnification, and adjust the magnification using SP2-909 if necessary. The specification is $\pm 1\%$.

Parallelogram Image Adjustment

Do the following procedure if a parallelogram is printed while adjusting the printing registration or the printing margin using a trimming area pattern.

NOTE: The following procedure should be done after adjusting the side-to-side registration for each paper tray station.



Replacement
Adjustment

1. Check whether the trimming area pattern (SP2-902, No.10) is printed as a parallelogram, as shown. If it is, do the following.
2. Remove the laser unit [A] (➡ 3.6.2).
3. Remove the bracket [B] (⚙ x2).
4. Install the adjusting cam [C] (P/N: A2309003).
5. Secure the adjustment bracket [D] (P/N A2679002) using the screw which was used for bracket [B]. However, do not tighten the screws at this time.
6. Adjusts the laser unit position by turning the adjusting cam. (Refer to the above illustration for the relationship between the image and the cam rotation direction).
7. Tighten the adjustment bracket.
8. Print the trimming area pattern to check the image. If it is still unsatisfactory, repeat steps 4 to 8.

3.12.2 SCANNING

- NOTE:** 1) Before doing the following scanner adjustments, perform or check the printing registration/side-to-side adjustment and the blank margin adjustment.
- 2) Use an S5S test chart to perform the following adjustments.

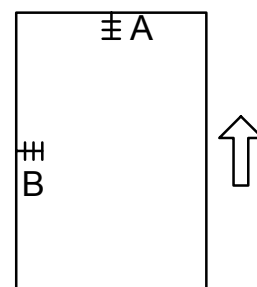
Registration: Platen Mode

1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the leading edge and side-to-side registration, and adjust them using the following SP modes if necessary.

	SP mode
Leading Edge	SP4-010
Side-to-side	SP4-011

A: Leading Edge Registration

B: Side-to-side Registration

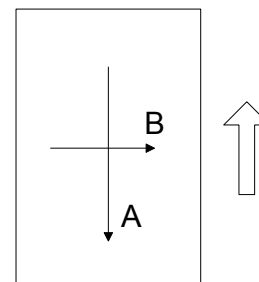


B205R971.WMF

Magnification

- NOTE:** Use an S5S test chart to perform the following adjustment.

A: Sub scan magnification
B: Main scan magnification



B205R972.WMF

1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the magnification ratio, and adjust it using the following SP mode if necessary. The specification is $\pm 1\%$.

	SP mode
Main Scan Magnification	SP4-009
Sub Scan Magnification	SP4-008

Standard White Density Adjustment

This adjusts the standard white density level.

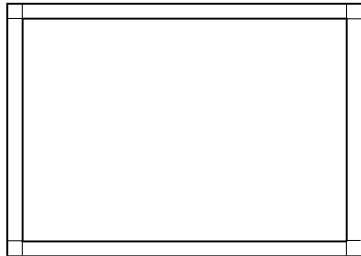
Perform this adjustment in any of the following conditions:

- After replacing the standard white plate.
- After replacing the NVRAM on the controller board. (If only controller board is replaced, this adjustment is not necessary, as the NVRAM from the old controller board is put on the new controller board.)
- After performing a memory all clear (SP5-801).

1. Place 10 sheets of new A4 sideways (do not use any recycled paper) or A3 paper on the exposure glass and close the platen cover or the ADF.
2. Enter SP 4-428 and select "1: Yes". The standard white density is automatically adjusted.

3.12.3 ADF IMAGE ADJUSTMENT

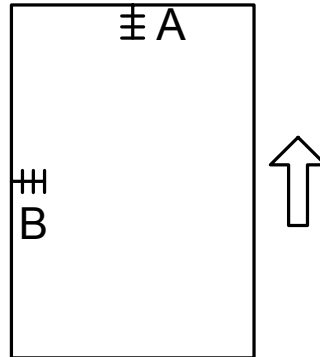
Registration



B205R966.WMF

A: Leading Edge Registration

B: Side-to-side Registration



B205R973.WMF

NOTE: Make a temporary test chart as shown above using A3/DLT paper.

1. Place the temporary test chart on the ADF and make a copy from one of the feed stations.
2. Check the registration, and adjust using the following SP modes if necessary.

	SP mode
Side-to-side Registration	SP6-006-1
Leading Edge Registration (Simplex)	SP6-006-2
Trailing Edge Blank Margin	SP6-006-3
Side-to-side Registration (Duplex: rear)	SP6-006-4

Sub Scan Magnification

NOTE: Make a temporary test chart as shown above using A3/DLT paper.


1. Place the temporary test chart on the ADF and make a copy from one of the feed stations.
2. Check the magnification, and adjust using the following SP modes if necessary. The specification is $\pm 1\%$.

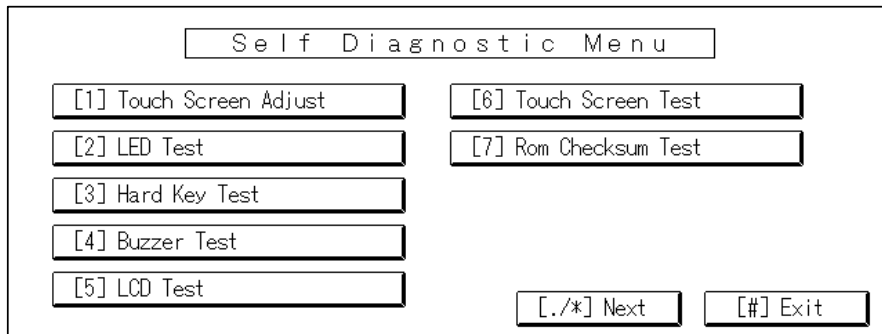
	SP mode
Sub scan magnification	SP6-006-5

3.12.4 TOUCH SCREEN CALIBRATION

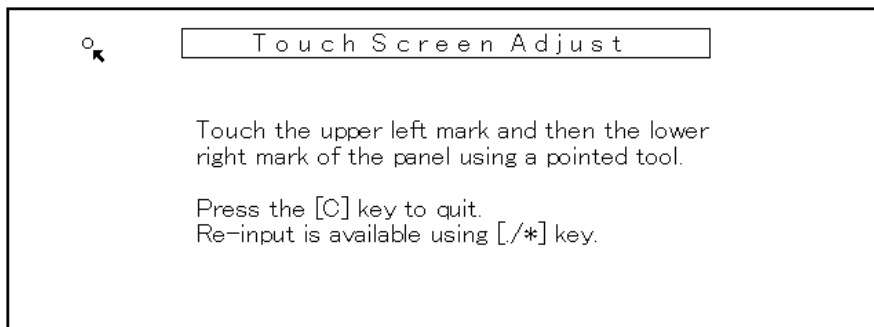
After clearing the memory, or if the touch panel detection function is not working correctly, follow this procedure to calibrate the touch screen.

NOTE: Do not attempt to use items [2] to [9] on the Self-Diagnostic Menu. These items are for design use only.



1. Press , press **1993**, and then press **C** 5 times to open the Self-Diagnostics menu.



B205R974.WMF



B205R975.WMF

2. On the touch screen press "Touch Screen Adjust" (or press **1**).
3. Use a pointed (not sharp!) tool to press the upper left mark .
4. Press the lower right mark  after it appears.
5. Touch a few spots on the touch panel to confirm that the marker (+) appears exactly where the screen is touched.

If the + mark does not appear where the screen is touched, press Cancel and repeat from Step 2.

6. When you are finished, press [#] OK on the screen (or press **#**).
7. Touch [#] Exit on the screen to close the Self-Diagnostic menu and save the calibration settings.

4. TROUBLESHOOTING

4.1 SERVICE CALL CONDITIONS

4.1.1 SUMMARY

There are 4 levels of service call conditions.

Level	Definition	Reset Procedure
A	To prevent damage to the machine, the main machine cannot be operated until the SC has been reset by a service representative (see the note below).	Enter SP mode, and then turn the main power switch off and on.
B	SCs that disable only the features that use the defective item. Although these SCs are not shown to the user under normal conditions, they are displayed on the operation panel only when the defective feature is selected.	Turn the operation switch or main switch off and on.
C	The SC history is updated. The machine can be operated as usual.	The SC will not be displayed. Only the SC history is updated.
D	Turning the main switch off then on resets SCs displayed on the operation panel. These are re-displayed if the error occurs again.	Turn the operation switch off and on.

Trouble-
shooting

When a Level “D” SC code occurs

When a Level D SC occurs, a screen opens on the operation panel to tell the operator:

- An error occurred
- The job in progress will be erased
- The machine will reboot automatically after approximately 30 seconds.

The operator can wait until the machine reboots automatically or touch “Reset” on the screen to reset the machine immediately and go back to the copy screen.

If the operator does not touch “Reset”

The next message tells the operator that the machine will reset automatically and that the previous job was lost and must be started again. After reading the message, the operator touches “Confirm” on the screen. The next screen shows the number and title of the SC code, and stops until the operator turns the machine off and on.

If the operator touches “Reset”

If the operator touches “Reset” to bypass the 30-second interval for the machine to reboot, the machine reboots immediately and the operation panel displays the copy screen.

Important

- Do not try to use the operation panel during an automatic reboot.
- If the Remote Service System is in use, the SC code is sent immediately to the Service Center


4.1.2 SC CODE DESCRIPTIONS

Important

- If a problem concerns a circuit board, disconnect and reconnect the connectors and then test the machine. Often a loose or disconnected harness is the cause of the problem. Always do this before you decide to replace the PCB.
- If a motor lock error occurs, check the mechanical load before you decide to replace the motor or sensors.
- When a Level “A” or “B” SC occurs while in an SP mode, the machine cannot display the SC number. If this occurs, check the SC number after leaving the SP mode.
- The machine reboots automatically when the machine issues a Level “D” SC code. This is done for Level “D” SC codes only.

CAUTION

Never turn off the main power switch when the power LED is lit or flashing. To avoid damaging the hard disk or memory, press the operation switch to switch the power off, wait for the power LED to go off, and then switch the main power switch off.

NOTE: The main power LED () lights or flashes while the platen cover or ARDF is open, while the main machine is communicating with a facsimile or the network server, or while the machine is accessing the hard disk or memory for reading or writing data.



Code No.		Symptom	Possible Cause
101	B	Exposure lamp error 1	<ul style="list-style-type: none"> Exposure lamp defective Lamp stabilizer defective Exposure lamp connector defective Standard white plate dirty Scanner mirror or scanner lens out of position or dirty SBU defective
		The standard white level was not detected properly when scanning the white plate.	
102	B	Exposure lamp error 2	<ul style="list-style-type: none"> SBCU defective IPU defective Controller board defective
		The exposure lamp was on longer than the allowed time (3 min.) after scanning of the originals was completed.	
120	D	Scanner home position error 1	<ul style="list-style-type: none"> Scanner motor defective Scanner motor drive board defective Scanner HP sensor defective Harness between SBCU and HP sensor loose, disconnected, damaged Harness between SBCU and scanner motor loose, disconnected, damaged SBCU defective Scanner wire, timing belt, pulley, or carriage defective
		The scanner home position sensor does not detect the on condition during initialization or copying.	
121	D	Scanner home position error 2	
		The scanner home position sensor does not detect the off condition during initialization.	
122	B	Scanner HP Sensor – Error 1	
		The HP sensor remains on while the carriage is returning to the home position.	
123	B	Scanner HP sensor – Error 2	
		The HP sensor does not switch on after the carriage has returned to the home position.	
141	C	Black offset correction error	
		Black offset could not be corrected after SP4800 was done.	
143	C	SBU auto adjust error	<ul style="list-style-type: none"> Exposure lamp disconnected There is no blank sheet of A3 size paper on the platen White plate dirty or missing
		The machine could not acquire the white or black peak level setting at power on, or after SP4428 (SBU Auto Adjust) was done.	
144	B	SBU connection error	Harness between SBU and IPU board loose, disconnected, or damaged.
		The IPU does not detect the SBU connection signal.	
165	B	Copy Data Security Unit error	<ul style="list-style-type: none"> The Copy Data Security Unit board is not installed The Copy Data Security Unit board is installed, but it is not the correct type for the machine.
		An error occurred when the machine attempted to recognize the Copy Data Security Unit board.	
193	B	Image transfer error	<ul style="list-style-type: none"> IPU board defective Controller board defective Video controller defective
		The IPU board does not finish within 1 minute after the image data has been transferred to the controller board.	

Trouble-
shooting

Code No.		Symptom	Possible Cause
195	B	DFGATE assert error	<ul style="list-style-type: none"> • ADF interface cable loose, disconnected, or damaged • SBCU defective • Mismatched firmware between the SBCU board and ADF
		The DFGATE signal does not assert within 30 seconds after the original has been scanned.	
196	B	DFGATE negate error	<ul style="list-style-type: none"> • ADF interface cable defective • SBCU defective • Mismatched firmware between the SBCU board and ADF
		The DFGATE signal does not negate within 1 minute after the DFGATE has been asserted.	
197	B	DFGATE error	<ul style="list-style-type: none"> • ADF interface cable defective • SBCU board defective • Mismatched firmware between the SBCU board and ADF
		The DFGATE signal has already been asserted at the original scan.	
198	B	Memory address error	<ul style="list-style-type: none"> • Mismatched firmware between the SBCU board and controller board • Controller defective • SBCU defective • IPU board defective <p>Note: Before you replace a board, update the firmware. This can repair the error.</p>
		The IPU board does not receive the memory address from the controller board.	
199	B	DF scanning finish error	<ul style="list-style-type: none"> • ADF interface cable defective • SBCU board defective • Mismatched firmware between the SBCU board and ADF
		The original does not finish scanning within 1 minute	
302	B	Charge roller error	<ul style="list-style-type: none"> • Charge high voltage supply board defective • Connection at PCU loose, disconnected, or damaged
		A charge roller current leak signal is detected.	
320	B	Polygon motor error	<ul style="list-style-type: none"> • Polygon motor I/F harness loose, disconnected, or defective • Polygon motor defective • Polygon motor driver defective • SBCU board defective
		<ul style="list-style-type: none"> • The XSCRDY signal did not activate (go LOW) within 10 sec. after the polygon motor turned on. • The XSCRDY signal did not deactivate (go HIGH) within 3 sec. after the polygon motor turned off. • The polygon motor continued to rotate for the prescribed number of rotations for 200 ms after the XSCRDY signal went HIGH (deactivated). • After the polygon motor turned on, or after the machine detected that the prescribed number of rotations had changed, the XSCRDY signal did not go LOW (active). 	

Code No.		Symptom	Possible Cause
322	B	Laser synchronization error	<ul style="list-style-type: none"> • Poor connection between the laser synchronization detector board and the SBCU board • Laser synchronization detector board out of position • Laser synchronization detector board defective • SBCU board defective • LD unit defective
		The main scan synchronization detector board cannot detect the laser synchronization signal for more than 10 consecutive 50 ms intervals.	
323	B	LD drive current over	<ul style="list-style-type: none"> • LD unit defective (not enough power, due to aging) • Poor connection between the LD unit and the SBCU board • SBCU board defective
		<ul style="list-style-type: none"> • The LD drive current exceeded 100 mA. • The XLDERR of the LD board was detected LOW twice within 100 ms. • Initialization of the PMACA failed. 	
350	B	ID sensor calibration – Error 1	<ul style="list-style-type: none"> • ID sensor defective or dirty • ID sensor harness disconnected or connector is damaged • SBCU defective • Scanning system or image creation system malfunction • High voltage power supply board (power pack) defective
		One of the following conditions occurred when the ID sensor pattern was calibrated during printing: <ul style="list-style-type: none"> • Vsp > 2.5V • Vsg < 2.5V • Vsp = 0V • Vsg = 0V 	
351	B	ID sensor calibration – Error 2	<ul style="list-style-type: none"> • ID sensor dirty or defective • ID sensor harness disconnected, or connector damaged • SBCU board defective • High voltage power supply board (power pack) defective
		The following conditions occurred simultaneously when the ID sensor pattern was calibrated during printing: <ul style="list-style-type: none"> • Vsg = 5V • PWM = 0 (LED current drop) 	
352	B	ID sensor calibration – Error 3	<ul style="list-style-type: none"> • ID sensor dirty or defective • ID sensor harness disconnected, or connector damaged • SBCU defective • High voltage power supply board (power pack) defective
		During printing the 2.5V value for edge detection of the ID sensor pattern could not be detected after 800 ms.	
353	B	ID sensor adjustment Error 1	<ul style="list-style-type: none"> • ID sensor dirty or defective • ID sensor harness disconnected, or connector damaged • SBCU defective • High voltage power supply board (power pack) defective • Scanning system or image creation system malfunction
		Error occurred during automatic adjustment of Vsg: <ul style="list-style-type: none"> • Vsg output did not attain 4V, even with PWM = 255 (maximum current for LED) • Vsg output was greater than 4V, even with PWM=0 (no current for the LED) 	
354	B	ID Sensor Adjustment Error 2	<ul style="list-style-type: none"> • ID sensor dirty or defective • ID sensor harness disconnected, or connector damaged • SBCU defective • High voltage power supply board (power pack) defective • Scanning system or image creation system malfunction
		Error occurred during automatic adjustment of Vsg. Vsg could not be adjusted to 4.0V±0.2V within 50 ms even after 20 attempts.	

Code No.		Symptom	Possible Cause
355	C	ID sensor error	<ul style="list-style-type: none"> ID sensor dirty or defective ID sensor harness disconnected, or connector damaged SBCU board defective High voltage power supply board (power pack) defective Scanning system or image creation system malfunction
		For details about the cause of the problem, please refer to SC350~354 above.	
389	B	TD sensor error	<ul style="list-style-type: none"> TD sensor defective TD sensor connector damaged.
		TD sensor output was less than 0.5V, or more than 0.5V 10 times in succession. If the fax unit is installed, this SC is issued immediately. If the fax unit is not installed, this SC is issued after the prescribed number of copies has printed.	
390	D	TD sensor error	<ul style="list-style-type: none"> TD sensor abnormal Poor connection of the PCU
		<p>The TD sensor outputs less than 0.5V or more than 4.0V 10 times consecutively during copying.</p> <p>Note:</p> <ul style="list-style-type: none"> If the fax option is installed, this SC is issued immediately. If the fax option is not installed, this SC is issued after the prescribed number of pages is copied. 	
391	B	Development bias leak	<ul style="list-style-type: none"> Poor connection at the PCU bias terminal High voltage supply board defective
		A development bias leak signal is detected.	
392	B	TD sensor initial setting error	<ul style="list-style-type: none"> The PCU toner seal was not removed ID sensor defective TD sensor defective Drum does not turn Development roller does not turn
		Initialization of the new PCU unit failed. TD sensor output voltage fell out of the adjustment range (2.0 \pm 0.2 V).	
398	B	PCU error South Korea only	<ul style="list-style-type: none"> Install the correct type of PCU.
		Illegal PCU unit.	
399	B	Illegal toner bottle South Korea only	<ul style="list-style-type: none"> Install the correct type of toner bottle.
		The toner bottle installed is not intended for use with this machine.	

Code No.		Symptom	Possible Cause
401	B	Transfer roller leak error 1	<ul style="list-style-type: none"> • High voltage supply board set incorrectly or defective • Transfer roller set incorrectly or damaged • Transfer unit set incorrectly
		A transfer roller current leak signal is detected. The current feedback signal for the transfer roller is not detected within the correct time.	
402	B	Transfer roller leak error 2	<ul style="list-style-type: none"> • Transfer roller set incorrectly or damaged • High voltage supply board set incorrectly or defective
		A transfer roller current leak signal is detected. The current feedback signal for the transfer roller is not detected within the correct time.	
411	B	Separation bias leak error	<ul style="list-style-type: none"> • High voltage supply board defective • Discharge plate defective
		A separation bias leak signal is detected.	
490	B	Toner supply motor leak error	<ul style="list-style-type: none"> • Toner supply motor defective
		More than 1 ampere supplied to the toner supply motor for longer than 200 ms.	
500	B	Main motor lock	<ul style="list-style-type: none"> • Too much load on the drive mechanism • Main motor defective
		A main motor lock signal is not detected for more than 500 ms after the main motor starts to rotate, or the lock signal is not detected for more than 500 ms during rotation after the last signal.	
501	B	1st paper tray lift motor malfunction	<ul style="list-style-type: none"> • Paper lift sensor connection loose, disconnected, or damaged • Paper lift sensor defective • Tray lift motor connection loose, disconnected, or damaged • Tray lift motor defective • Obstruction that causes overload on the drive mechanism
502	B	2nd paper tray lift motor malfunction	
503	B	3rd paper tray lift motor malfunction (optional paper tray unit)	
504	B	4th paper tray lift motor malfunction (optional paper tray unit)	
		The paper lift sensor is not activated after the tray lift motor has been on for 18 seconds.	
506	B	Paper tray motor lock (optional paper tray unit)	<ul style="list-style-type: none"> • Paper tray motor connection loose, disconnected, or damaged • Paper tray motor defective • Obstruction that causes overload on the drive mechanism
		A motor lock signal is not detected for more than 1.5 s or the lock signal is not detected for more than 1.0 s during rotation.	
508	B	LCT rear fence drive error	<ul style="list-style-type: none"> • Rear fence motor connection loose, disconnected, or damaged • Rear fence motor defective • Return position sensor connector loose, disconnected, or damaged • Return position sensor defective • Obstruction that causes overload on the drive mechanism
		The return position sensor is not activated after the rear fence drive motor has been on to lower the tandem tray for 8 seconds.	
509	B	LCT side fence drive error	<ul style="list-style-type: none"> • Obstruction that causes overload on the drive mechanism • Side fence motor disconnected or defective • Side fence position sensor disconnected or defective • Side fence close sensor disconnected or defective
		The side fence positioning sensor is not activated for more 3 seconds when the paper stack in the left tray is moved to the right tray. The side fence close sensor is not activated for more 3 seconds after moving the paper stack to the right tray.	

Code No.		Symptom	Possible Cause
510	B	LCT lower limit error	<ul style="list-style-type: none"> • Tray lift motor defective • Poor connection of the tray lift motor • Lower limit sensor disconnected or defective • Obstruction that causes overload on the drive mechanism.
		The lower limit sensor does not activate within 8 seconds after the tray has been lowered.	
520	B	Paper tray error	<ul style="list-style-type: none"> • A defective motor • A defective sensor • Obstruction that causes overload on the drive mechanism
		An error occurs (i.e motor error, or sensor error, etc) for any paper tray.	
541	A	Fusing thermistor open	<ul style="list-style-type: none"> • Fusing thermistor out of its position because of incorrect installation • Fusing thermistor disconnected or defective • Power supply not within rated range (15% or more below rating)
		The fusing temperature did not increase 12 °C at the center or ends of the hot roller within 2 seconds after two checks from the time the fusing lamps turned on.	
542	A	Fusing temperature warm-up error	<ul style="list-style-type: none"> • Fusing thermistor defective or out of position • Fusing lamp disconnected • Fusing thermostat open
		The fusing temperature does not reach the standby temperature within 20 seconds after the main switch is turned on.	
543	A	Fusing overhear error 1	<ul style="list-style-type: none"> • TRIAC short on PSU (PSU defective) • SBCU board defective • Fusing thermistor defective
		A fusing temperature over 230°C is detected for 5 second by the fusing thermistor.	
544	A	Fusing overhear error 2	<ul style="list-style-type: none"> • TRIAC short on PSU (PSU defective) • SBCU board defective • Fusing thermistor defective • Voltage of power supply unstable
		<ul style="list-style-type: none"> • A fusing temperature over 250°C is detected by the fusing temperature monitor circuit in the SBCU board. • The power was interrupted for more than 0.3 sec. 	
545	A	Fusing overhear error 3	<ul style="list-style-type: none"> • Hot roller thermistor is out of its position because of incorrect installation
		After warmup, the hot roller attained full operating temperature and maintained this temperature for 10 sec. without the hot roller rotating.	
546	A	Unstable fusing temperature	<ul style="list-style-type: none"> • Thermistor disconnected or defective • Fusing unit drawer installed incorrectly
		The fusing temperature varies 50°C or more twice in succession within 1 sec.	
547	B	Zero cross signal detection error	<ul style="list-style-type: none"> • PSU defective • SBCU board defective
		Zero cross signals are not detected within a certain period.	
548	A	Fusing unit set error	<ul style="list-style-type: none"> • Poor connection of the fusing unit • The fusing unit is not installed
		The machine does not detect the fusing unit.	
557	B	Zero cross waveform signal error	<ul style="list-style-type: none"> • Electrical noise on the power supply line
		The waveform of the zero cross signal was detected out of range.	
590	B	Exhaust fan motor error	<ul style="list-style-type: none"> • Poor connection of the exhaust fan motor • Too much load on the motor drive
		The CPU detects an exhaust fan lock signal for more than 3.5 seconds.	

Code No.		Symptom	Possible Cause
611	B	Communication break error between SBCU and ADF	<ul style="list-style-type: none"> Serial line connecting SBCU and ADF unstable Connectors between SBCU and ADF loose, disconnected, or damaged
		The SBCU received a break (LOW) signal from the ADF main board.	
612	B	Communication command error between SBCU and ADF	<ul style="list-style-type: none"> Update the firmware SBCU board defective
		The SBCU sends a command to the ADF main board that it cannot execute.	
620	B	Communication timeout between SBCU and finisher: Error 1	<ul style="list-style-type: none"> Serial line connecting SBCU and finisher unstable External noise
		The SBCU cannot receive a response within 100 ms after 3 attempts after sending data to the finisher.	
621	B	Communication timeout between SBCU and finisher: Error 2	<ul style="list-style-type: none"> Serial line connecting SBCU and finisher unstable External noise
		A break (LOW) signal was received from the finisher.	
650	B	Communication timeout error between SBCU and duplex unit	<ul style="list-style-type: none"> Serial line connecting SBCU and duplex unit unstable External noise SBCU board and duplex main board connection defective or loose Duplex main board defective SBCU board defective
		The SBCU cannot receive a response within 1 sec. from the duplex unit.	
669	B	EEPROM Communication Error	<ul style="list-style-type: none"> EEPROM installed incorrectly EEPROM defective <p>After you check the installation, turn the machine off and on. If this does not repair the problem, replace the SBCU.</p>
		The machine failed to detect a match between the read/write data for the EEPROM on the SBCU after 3 attempts.	
670	D	Engine response error	<ul style="list-style-type: none"> SBCU installed incorrectly SBCU defective Controller board defective
		After powering on the machine, a response is not received from the engine within 30 seconds.	
672	D	Controller-to-operation panel communication error at startup	<ul style="list-style-type: none"> Controller stall Controller board installed incorrectly Controller board defective Operation panel connector loose or defective
		After powering on the machine, the communication circuit between the controller and the operation panel is not opened, or communication with controller is interrupted after a normal startup.	
720	B	Finisher motor error	<ul style="list-style-type: none"> The motor connectors are loose, disconnected or damaged. The motor is defective
		<p>The meaning of this SC error depends on which finisher is installed.</p> <p>500-sheet Finisher B442</p> <p>There is a problem with the upper transport motor.</p> <p>1000-sheet Finisher B408</p> <p>There is a problem with the registration motor.</p>	

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Code No.		Symptom	Possible Cause
721	B	Lower transport motor error – 1000-sheet Finisher B408	<ul style="list-style-type: none"> The motor connectors are loose, disconnected or damaged. The motor is defective
		There is a problem with the lower transport motor.	
722	B	Finisher jogger motor error – 1000-sheet Finisher B408	<ul style="list-style-type: none"> Jogger H.P sensor disconnected or defective Jogger motor connectors loose, disconnected, or damaged Jogger motor defective
		The finisher jogger H.P sensor remains de-activated for a certain time when returning to home position. The finisher jogger H.P sensor remains activated for a certain time when moving away from home position.	
724	B	Finisher staple hammer motor error – 1000-sheet Finisher B408	<ul style="list-style-type: none"> Staple jam Stapler overload caused by trying to staple too many sheets Staple hammer motor defective
		Stapling does not finish within 600 ms after the staple hammer motor turned on.	
725	B	Finisher stack feed-out motor error – 1000-sheet Finisher B408	<ul style="list-style-type: none"> Stack feed-out H.P sensor defective Stack feed-out motor defective
		The stack feed-out belt H.P sensor does not activate within a certain time after the stack feed-out motor turned on.	
726	B	Finisher lift motor error	<ul style="list-style-type: none"> Shift tray lift motor defective Stack height sensor defective
		The stack height sensor does not activate within a certain time after the shift tray lift motor turned on. Note: This error applies to the 500-sheet and the 1000-sheet finisher.	
727	B	Finisher staple hammer motor error – 500-sheet Finisher B442	<ul style="list-style-type: none"> Staple jam Stapler overload caused by trying to staple too many sheets Staple hammer motor defective
		Stapling does not finish within a certain time after staple hammer motor turned on.	
728	B	Finisher exit motor/paper stack height error	Exit motor error (B408) <ul style="list-style-type: none"> Exit motor connector loose, disconnected, or damaged Exit motor defective Stack height sensor error (B442) <ul style="list-style-type: none"> Stack height lever solenoid defective Stack height sensor defective Lever sensor defective Main control board defective
		The meaning of this SC error depends on which finisher is installed. 1000-sheet Finisher B408 Exit motor error. 500-sheet Finisher B442 Stack height sensor error. The stack height detection lever does not return to its home position before going to detect the stack height.	
730	B	Finisher stapler motor error –1000-sheet Finisher B408	<ul style="list-style-type: none"> Stapler motor defective Stapler H.P sensor defective Poor stapler motor connection
		The stapler does not return to its home position within a certain time after the stapler motor turned on. -or- The stapler H.P sensor does not activate within a certain time after the stapler motor turned on.	

Code No.		Symptom	Possible Cause
731	B	Finisher motor error	1000-sheet Finisher <ul style="list-style-type: none"> Exit guide plate motor defective Exit guide plate HP sensor defective Exit guide plate open sensor defective 500-sheet Finisher <ul style="list-style-type: none"> Output tray motor defective Tray upper limit sensor defective
		The meaning of this SC error depends on which finisher is installed. 1000-sheet Finisher B408 Exit guide plate motor error. The exit guide plate open sensor or exit guide plate HP sensor does not activate within a certain time after the exit guide plate motor turned on. (1000-sheet finisher) 500-sheet Finisher B442 Output tray motor error. The tray upper limit sensor does not activate within a certain time after the shift motor turned on. (500-sheet finisher)	
732	B	Finisher shift motor error – 1000-sheet Finisher B408	<ul style="list-style-type: none"> Shift motor defective Shift tray HP sensor defective
		Roller shift does not finish within a certain time after the shift motor turned on.	
770	B	Shift tray shift motor error	<ul style="list-style-type: none"> Shift sensor defective Shift motor defective
		During a shift operation the sensor state did not change (off to on, or on to off) within 2.4 sec.	
791	B	Bridge communication error	<ul style="list-style-type: none"> Poor connection between the finisher and mainframe Harness damaged or defective
		The machine cannot communicate with the finisher with the bridge unit installed.	
792	B	Finisher connection error	<ul style="list-style-type: none"> Finisher connection defective
		The machine cannot communicate with the finisher with the bridge unit installed.	
793	B	Interchange communication error	<ul style="list-style-type: none"> Interchange unit installed incorrectly Interchange unit connection loose, disconnected, or damaged Interchange unit harness damaged
		The machine cannot communicate with the interchange unit properly when the duplex unit is installed.	
800	D	Startup without video output end error (K)	<ul style="list-style-type: none"> Controller board defective
		Video transfer to the engine is started, but the engine did not issue a video transmission end command within the specified time.	
804	D	Startup without video input end (K)	<ul style="list-style-type: none"> Controller board defective
		A video transmission was requested from the scanner, but the scanner did not issue a video transmission end command within the specified time.	
818	B	Watchdog error	<ul style="list-style-type: none"> Defective controller board
		While the system program is running, no other programs can run (due to a bus hold or endless loop).	

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Code No.		Symptom	Possible Cause
819	B	Kernel abnormal end error	<ul style="list-style-type: none"> • HDD error • Software application error • RAM shortage • MBU jumper set incorrectly. For more, see "Fax Option Type B766" manual "1. Installation".
		A HDD error or a software error has occurred, terminating the SCS process, gwininit process, and finally the kernel program. A system process has exhausted the RAM.	
820	B	Self-Diagnostic Error: CPU	<ul style="list-style-type: none"> • Defective controller board • Software defective • MBU jumper set incorrectly. For more, see "Fax Option Type B766" manual "1. Installation".
		An unexpected exception or interruption has occurred.	
821	D	Self-Diagnostic Error: ASIC	<ul style="list-style-type: none"> • Controller board defective
		The ASIC returned an error during the self-diagnostic test because the ASIC and CPU timer interrupts were compared and determined to be out of range.	
822	D	Self-Diagnostic Error: HDD	<ul style="list-style-type: none"> • HDD defective • HDD connector defective • Controller board defective
		The hard disk drive returned an error during the self-diagnostic test.	
823	D	Self-diagnostic Error: NIC	<ul style="list-style-type: none"> • Controller board defective
		The network interface board returned an error during the self-diagnostic test.	
824	D	Self-diagnostic Error: Resident NVRAM	<ul style="list-style-type: none"> • Replace the resident NVRAM on the controller board • Replace the controller board
		The resident non-volatile RAM returned an error during the self-diagnostic test.	
826	D	Self-diagnostic Error: NVRAM/Optional NVRAM	<ul style="list-style-type: none"> • Replace the NVRAM on the controller board
		The NVRAM or optional NVRAM returned an error during the self-diagnostic test.	
827	D	Self-diagnostic Error: RAM	<ul style="list-style-type: none"> • Update the controller firmware again • Replace the 256 MB memory
		The resident RAM returned a verify error during the self-diagnostic test.	
828	D	Self-diagnostic Error: ROM	<ul style="list-style-type: none"> • Controller board defective • Update the controller firmware
		The resident read-only memory returned an error during the self-diagnostic test.	
829	D	Self-diagnostic Error: Optional RAM	<ul style="list-style-type: none"> • Replace the optional memory. • Controller board defective
		The optional RAM returned an error during the self-diagnostic test.	
838	D	Self-diagnostic Error: Clock Generator	<ul style="list-style-type: none"> • Replace the controller board
		A verify error occurred when setting data was read from the clock generator via the I2C bus.	

Code No.		Symptom	Possible Cause
840	D	EEPROM error 1	<ul style="list-style-type: none"> EEPROM defective; replace the controller board EEPROM has reached the end of its service life
		During input/output with the EEPROM on the controller board, one of the following errors occurred: <ul style="list-style-type: none"> A read error occurred and continued after 3 retries. A write error occurred. 	
841	D	EEPROM error 2	<ul style="list-style-type: none"> EEPROM on the control board defective, or has reached the end of its service life. Replace the controller board.
		The values read from the three areas during the mirroring check phase did not match. The data is being written into the three areas differently.	
850	D	Network I/F Abnormal	<ul style="list-style-type: none"> Controller board defective (NIB function built into the controller board. Replace the controller board.
		NIB interface error.	
851	D	IEEE 1394 I/F Abnormal	<ul style="list-style-type: none"> IEEE1394 interface board defective Controller board defective
		IEEE1394 interface error. Note: This SC code applies to the B205/B209. The D007/D008 does not support IEEE 1394.	
853	D	Wireless LAN board error 1	<ul style="list-style-type: none"> Wireless LAN board not installed when the machine was turned on
		At startup the wireless LAN board could be accessed, but the wireless LAN board (IEEE 802.11b or Bluetooth) could not access the controller board.	
854	D	Wireless LAN board error 2	<ul style="list-style-type: none"> Wireless LAN board has been removed during machine operation.
		The board that holds the wireless LAN board can be accessed, but the wireless LAN board (802.11b/Bluetooth) itself cannot be accessed while the machine is operating	
855	D	Wireless LAN board error 3	<ul style="list-style-type: none"> Wireless LAN board defective Wireless board connection not tight
		An error was detected for the wireless LAN board (802.11b or Bluetooth).	
856	D	Wireless LAN board error	<ul style="list-style-type: none"> Wireless LAN board defective PCI connector loose
		An error is detected for the wireless LAN board (802.11b or Bluetooth).	
857	D	USB I/F Error	<ul style="list-style-type: none"> USB 2.0 disconnected Controller board defective
		The USB driver is unstable and generated an error. The USB I/F cannot be used. The USB driver can generate three types of errors: RX, CRC, and STALL errors. Only the STALL error can generate this SC code.	
860	B	Startup without HD connection at main power on	<ul style="list-style-type: none"> Cable between HDC and HDD loose or defective HDD power connector loose or defective HDD defective Replace the controller board
		The hard disk connection is not detected.	

Code No.		Symptom	Possible Cause
861	B	HDD error 1	<ul style="list-style-type: none"> • Cable between HDC and HDD loose or defective • HDD power connector loose or defective • HDD defective • Replace the controller board
		The HDD was not detected when the machine was turned on. The hard disk connection is not detected.	

Code No.		Symptom	Possible Cause
862	A	HDD error 2	<ul style="list-style-type: none"> • Format the HDD with SP5832. Note: If you continue to use an HDD with bad sectors, this can have an effect on performance. Replace the HDD as soon as possible.
		Maximum number of bad sectors detected on HD. Up to 101 bad sectors have appeared in the area on the hard disk where image data is archived, and the hard disk may require replacement.	
863	B	HDD error 3	<ul style="list-style-type: none"> • A bad sector occurred during operation of the HDD
		Startup without HD data lead. Data stored on the hard disk is not read correctly.	
864	D	HDD error 4	<ul style="list-style-type: none"> • Data transfer was abnormal in the data read from the HDD.
		HD data CRC error. During operation of the HD, the HD responded with a CRC error.	
865	D	HDD access error	<ul style="list-style-type: none"> • HDD defective.
		HDD responded to an error during operation for a condition other than those for SC863 or 864.	
866	D	SD card error 1: Recognition error	<ul style="list-style-type: none"> • Use only SD cards that contain the correct data.
		The SD card in the slot contains illegal program data.	
867	D	SD card error 2: SD card removed	<ul style="list-style-type: none"> • Insert the SD card, then turn the machine off and on.
		The SD card in the boot slot when the machine was turned on was removed while the machine power was on.	
868	D	SD card error 3: SD card access	<ul style="list-style-type: none"> • SD card not inserted correctly • SD card defective • Controller board defective Note: If you want to try to reformat the SD card, use SD Formatter Ver 1.1.
		An error occurred while an SD card was used.	
870	B	Address Book Data Error	<ul style="list-style-type: none"> • Software defective • HDD defective
		Address book data stored on the hard disk was detected as abnormal when it was accessed from either the operation panel or the network.	
872	B	HDD mail RX data abnormal	<ul style="list-style-type: none"> • HDD sector corrupted. Reformat with SP5832 007. • If this does not repair the problem, replace the HDD.
		An error was detected at power on. The data received during mail receive could be neither read nor written.	

Code No.	Symptom	Possible Cause
873	B	HDD mail TX data error
		<p>An error was detected on the HDD immediately after the machine was turned on, or power was turned off while the machine used the HDD.</p> <ul style="list-style-type: none"> Do SP5832-007 (Format HDD – Mail TX Data) to initialize the HDD. Replace the HDD 

Code No.	Symptom	Possible Cause
874	D	<p>Delete All error 1: HDD</p> <p>A data error was detected for the HDD/NVRAM after the Delete All option was used. Note: The source of this error is the Data Overwrite Security Unit B660 running from an SD card.</p> <ul style="list-style-type: none"> Turn the main switch off/on, and try the operation again. Install the Data Overwrite Security Unit again. For more, see section “1. Installation”. HDD defective
875	D	<p>Delete All error 2: Data area</p> <p>An error occurred while the machine deleted data from the HDD. Note: The source of this error is the Data Overwrite Security Unit B660 running from an SD card.</p> <ul style="list-style-type: none"> Turn the main switch off/on, and try the operation again.
876	D	<p>Log data abnormal</p> <p>An error was detected in the handling of the log data at power on or during machine operation. This can be caused if you turn the machine off while it is operating.</p> <ul style="list-style-type: none"> Software error. Update the firmware NVRAM defective HDD defective
880	D	<p>File format converter error</p> <p>A request for access to the File Format Converter (MLB) was not answered within the specified time.</p> <ul style="list-style-type: none"> File format converter disconnected File format converter board defective
900	D	<p>Electrical total counter error</p> <p>The total count contains something that is not a number.</p> <ul style="list-style-type: none"> NVRAM incorrect type NVRAM defective NVRAM data scrambled Unexpected error from external source
901	D	<p>Electronic total counter error</p> <p>The value of the total counter has already exceeded 9999999</p> <ul style="list-style-type: none"> Replace the NVRAM on the controller board
920	D	<p>Printer Error 1</p> <p>An internal application error was detected and operation cannot continue.</p> <ul style="list-style-type: none"> Software defective Insufficient memory
921	B	<p>Printer error 2</p> <p>When the application started, the necessary font was not on the SD card.</p> <ul style="list-style-type: none"> Font not on the SD card
925	D	<p>Network File Error</p> <p>The file that manages NetFile is corrupted and operation cannot continue.</p> <ul style="list-style-type: none"> Software defective Files on the HDD corrupted
951	B	<p>F-GATE error at write request</p> <p>After the IPU receives an F-gate signal, it receives another F-gate signal.</p> <ul style="list-style-type: none"> Update the controller firmware SBCU board defective

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Code No.		Symptom	Possible Cause
953	B	Scanner setting error	<ul style="list-style-type: none"> Update the controller firmware
		The IPU does not respond with the scanner setting signal required to start scanning processing.	
954	B	Printer setting error	<ul style="list-style-type: none"> Replace the IPU board Replace the controller board Update the controller firmware
		The IPU does not respond with the settings that are required to start image processing by the printer.	

Code No.		Symptom	Possible Cause
955	B	Memory setting error	<ul style="list-style-type: none"> Replace the IPU board Replace the controller board Update the controller firmware
		The IPU does not respond with the settings that are required to start image processing using the memory.	
964	B	Printer ready error	<ul style="list-style-type: none"> Replace the IPU board Replace the controller board Download the controller firmware
		The printer ready signal is not generated within 17 seconds after the IPU received the print start signal.	
984	D	Print image data transfer error	<ul style="list-style-type: none"> Controller board defective SBCU board defective Connectors between SBCU and controller loose or defective
		The image transfer from the controller to the engine via the PCI bus does not end within 15 s after starting.	
986	D	Software write parameter setting error	<ul style="list-style-type: none"> Update the controller firmware
		An unstable area at the storage destination in the settings table is set at NULL for the parameter received by the write module.	
990	D	Software performance error	<ul style="list-style-type: none"> Software defective Internal parameter incorrect Insufficient working memory When this SC occurs, the file name, address, and data will be stored in NVRAM. This information can be checked by using SP7-403. Note the above data and the situation in which this SC occurs. Then report the data and conditions to your technical control center.
		The software attempted to perform an unexpected operation.	
991	C	Software continuity error	<ul style="list-style-type: none"> No operation required. This SC code does not appear on the panel, and is only logged.
		The software attempted to perform an unexpected operation. However, unlike SC990, the object of the error is continuity of the software.	
992	D	Unexpected Software Error	<ul style="list-style-type: none"> Software defective An error undetectable by any other SC code occurred
		Software encountered an unexpected operation not defined under any SC code.	



Code No.		Symptom	Possible Cause
995	D	Machine Type Information Error	<ul style="list-style-type: none"> Replace the controller board with the correct board.
		After the machine power is turned on, a mismatch is detected between the CPM information sent from the controller to the engine.	



Code No.		Symptom	Possible Cause
997	B	Application function selection error	<ul style="list-style-type: none"> Update the firmware for the application that failed An option required by the application (RAM, DIMM, board) is not installed
		The application selected by a key press on operation panel does not start or ends abnormally.	
998	D	Application start error	<ul style="list-style-type: none"> Download controller firmware Replace the controller board An option required by the application (RAM, DIMM, board) is not installed
		After power on, the application does not start within 60 s. (All applications neither start nor end normally.)	

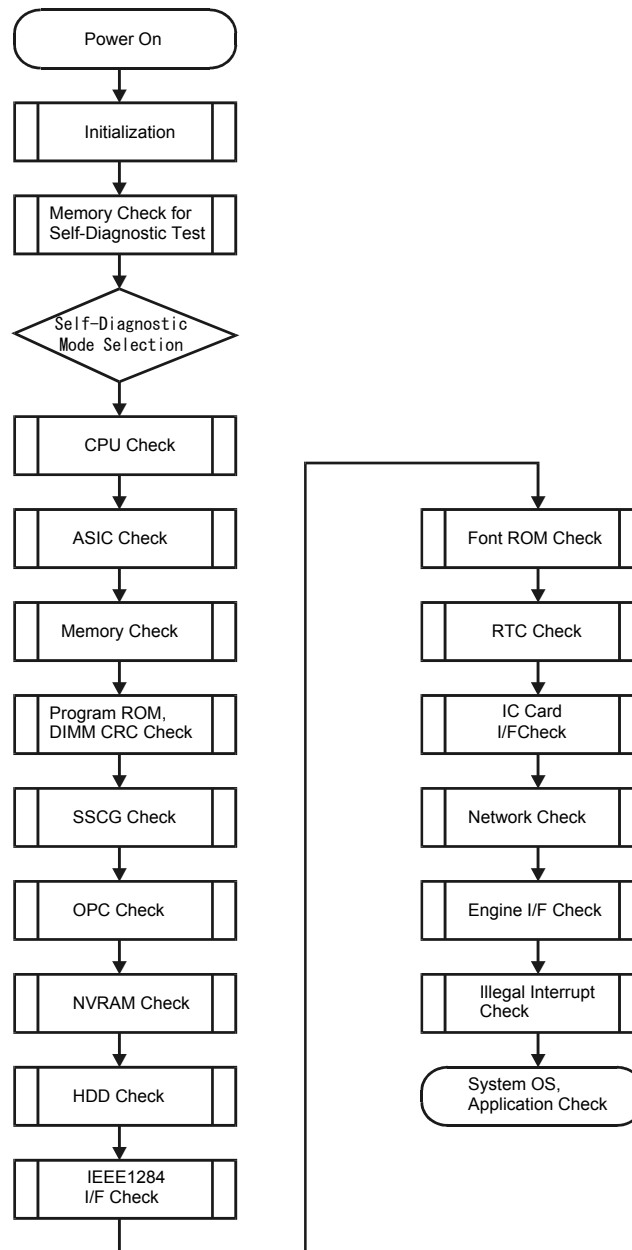


4.2 SELF-DIAGNOSTIC MODE

4.2.1 SELF-DIAGNOSTIC MODE AT POWER ON

As soon as the main machine is powered on, the controller waits for the initial settings of the copy engine to take effect and then starts an independent self-diagnostic test program. The self-diagnostic test follows the path of the flow chart shown below and checks the CPU, memory, HDD, and so on. An SC code is displayed in the touch panel if the self-diagnostic program detects any malfunction or abnormal condition.

Self-Diagnostic Test Flow



B205T904.WMF

4.2.2 DETAILED SELF-DIAGNOSTIC MODE

In addition to the self-diagnostic test initiated every time the main machine is powered on, you can set the machine in a more detailed diagnostic mode manually in order to test other components or conditions that are not tested during self-diagnosis after power on.

The following device is required in order to put the machine in the detailed self-diagnosis mode.

Also, the printer/scanner unit and the optional Centronics (IEEE1284) interface must be installed.

No.	Name
G0219350	Parallel Loopback Connector

Executing Detailed Self-Diagnosis

Follow this procedure to execute detailed self-diagnosis.

1. Switch off the machine, and connect the parallel loopback device to the Centronics I/F port.
2. Hold down $\text{\textcircled{\#}}$, press and hold down $\text{\textcircled{\times}}$, and then while pressing both keys at the same time, switch on the machine.

You will see "Now Loading" on the touch-panel, and then you will see the results of the test.

A report like the one below is printed every time a detailed self-diagnostic test is executed, whether errors were detected or not.

MODEL NAME XXXX		Serial No. : ACLD000034	Firmware P/# : ACP82XXXX	[1/1]
Self-Diagnosis Report		Firmware Version : 2.49.01	Wed Nov 22 13:15:30 2000	

[System Construction]

Kernel Version : NetBSD 1.3.3 (SHINYOKOHAMA_ROM) #0: Sat Nov 11 16:15:35 JST 2000	CPU Pipeline Clock : 200.0 MHz
CPU System Bus Clock : 100.0 MHz	ASIC Version : 1397306160
Board Type : 7	RAM Capacity : 100.663296 MB
RTC Existence : existence	HDD Model :
HDD Existence : existence	

[Total Counter]

0001000

[Program No. @]

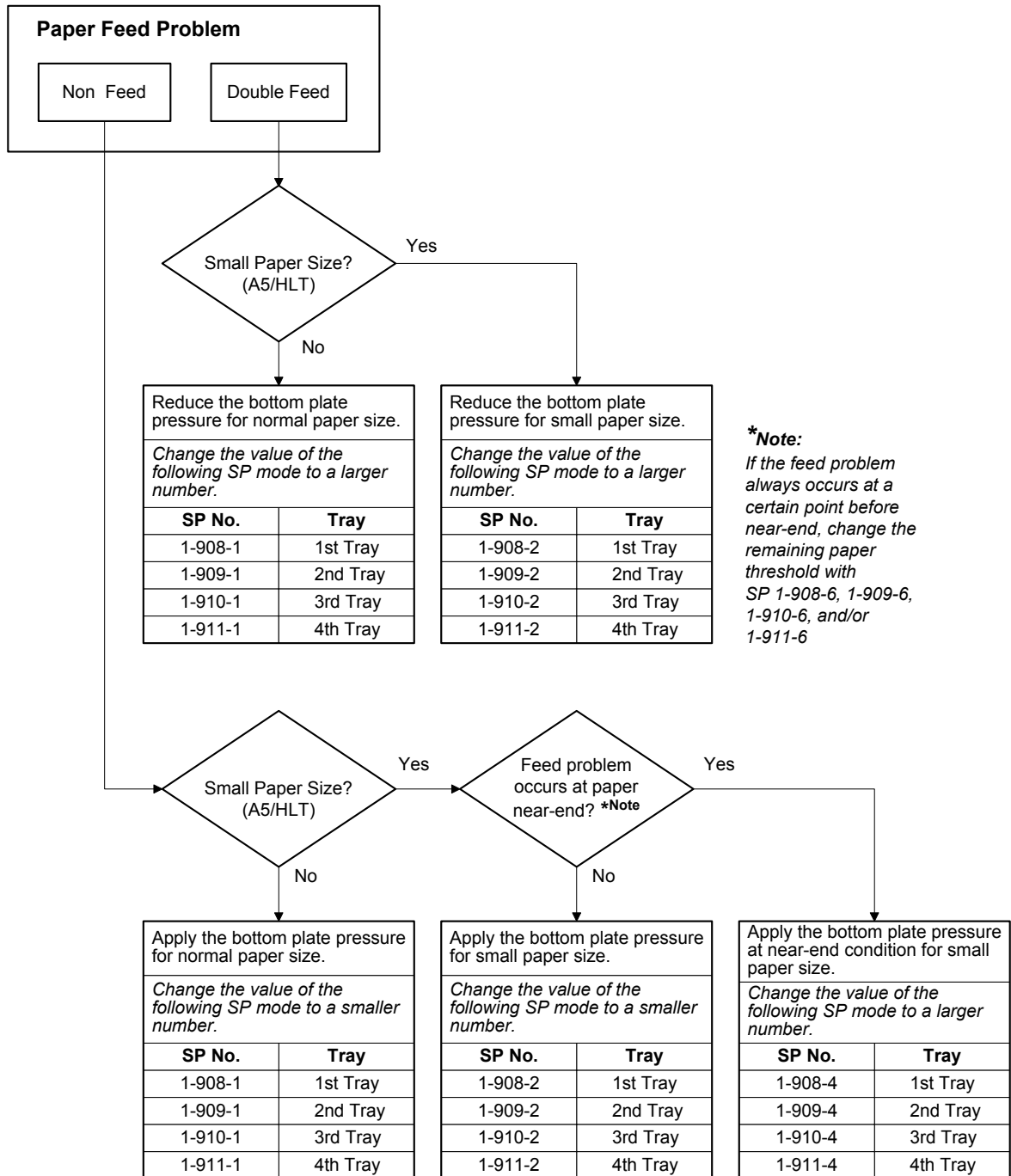
MAIN : ACP82XXXX	ENGINE : Ver1.96
LCDC : V1.39	PI :
ADF : B3515620B	SIB : B0045383
FIN :	FIN SDL :
BANK : A6825150	LCT :
MBX :	FCU :
DPX :	

[Error List @@@]

SCCODE (ERROR CODE)	SC CODE (ERROR CODE)	SC CODE (ERROR CODE)	SC CODE (ERROR CODE)
SC835 (110C)	SC820 (0001)	SC820 (0002)	SC820 (0003)
SC820 (0004)	SC820 (0005)		

4.3 PAPER FEED TROUBLESHOOTING

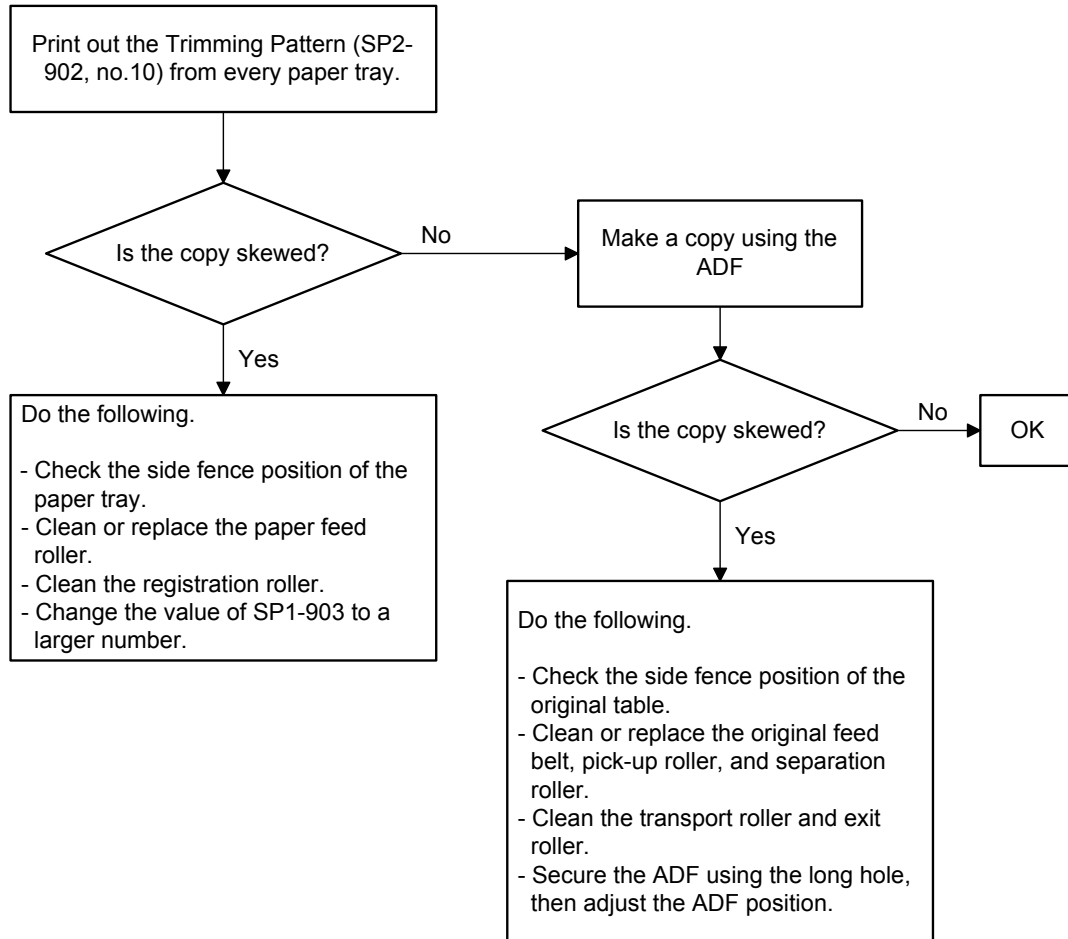
When a paper double feed or paper non feed problem occurs, fix the problem in accordance with the following flow chart.



B205T906.WMF

4.4 SKEWED IMAGE

Do the following to fix a skewed image problem.



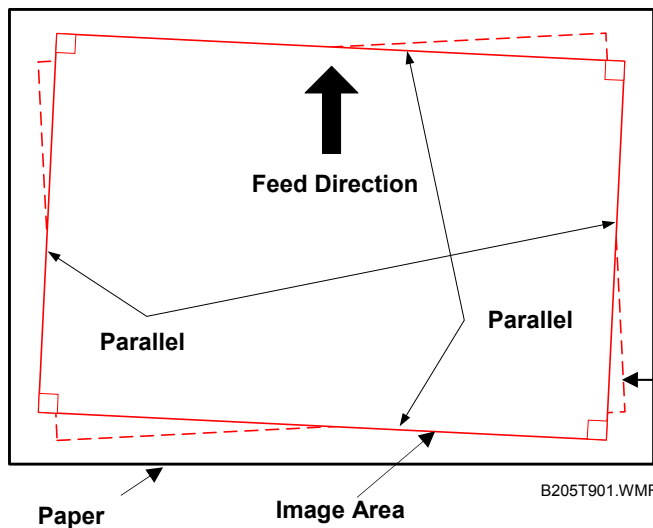
B205T907.WMF

4.5 IMAGE PROBLEMS

4.5.1 SKEWED, TRAPEZOID AND PARALLELOGRAM IMAGES

Skewed Images

- The image's leading and trailing edges are parallel.
- The image's left and right edges are also parallel.
- But, all four sides are not parallel with the paper edge.

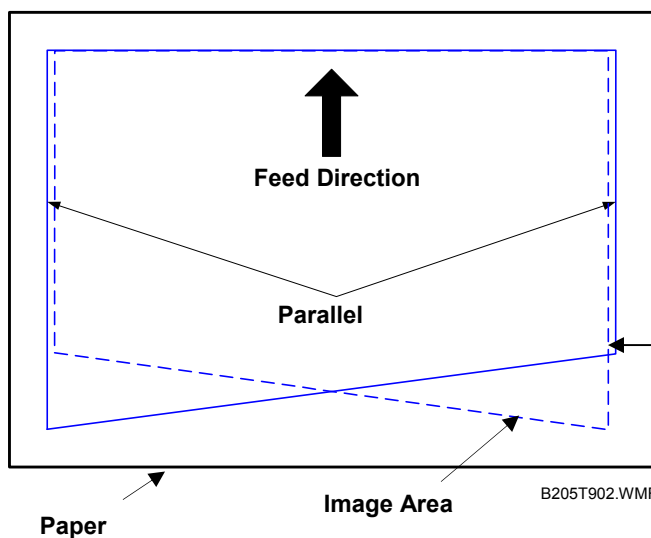


Skewed image may also appear in the opposite orientation.

Trouble-
shooting

Trapezoid Images

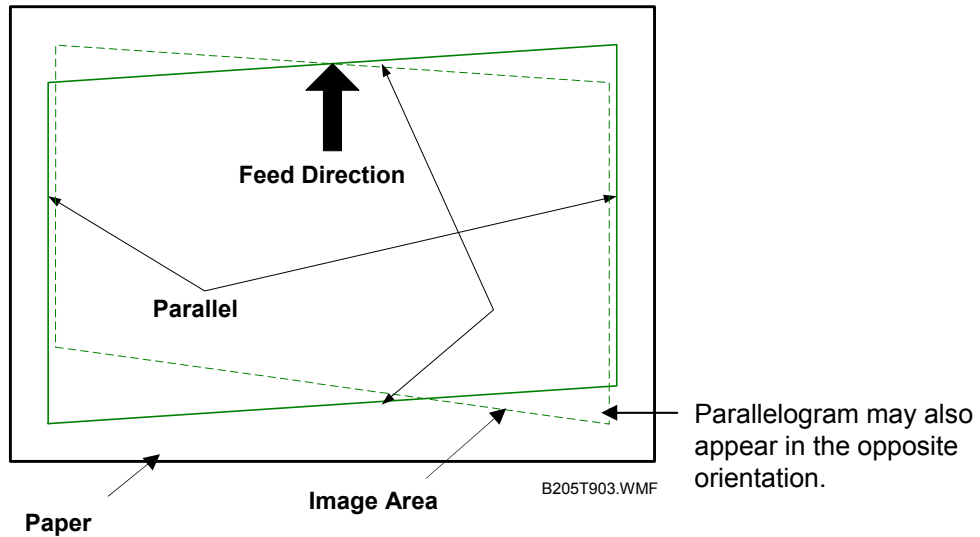
- Only the image's trailing edge is not parallel with the paper edge. The other 3 sides are parallel to the paper's edges.



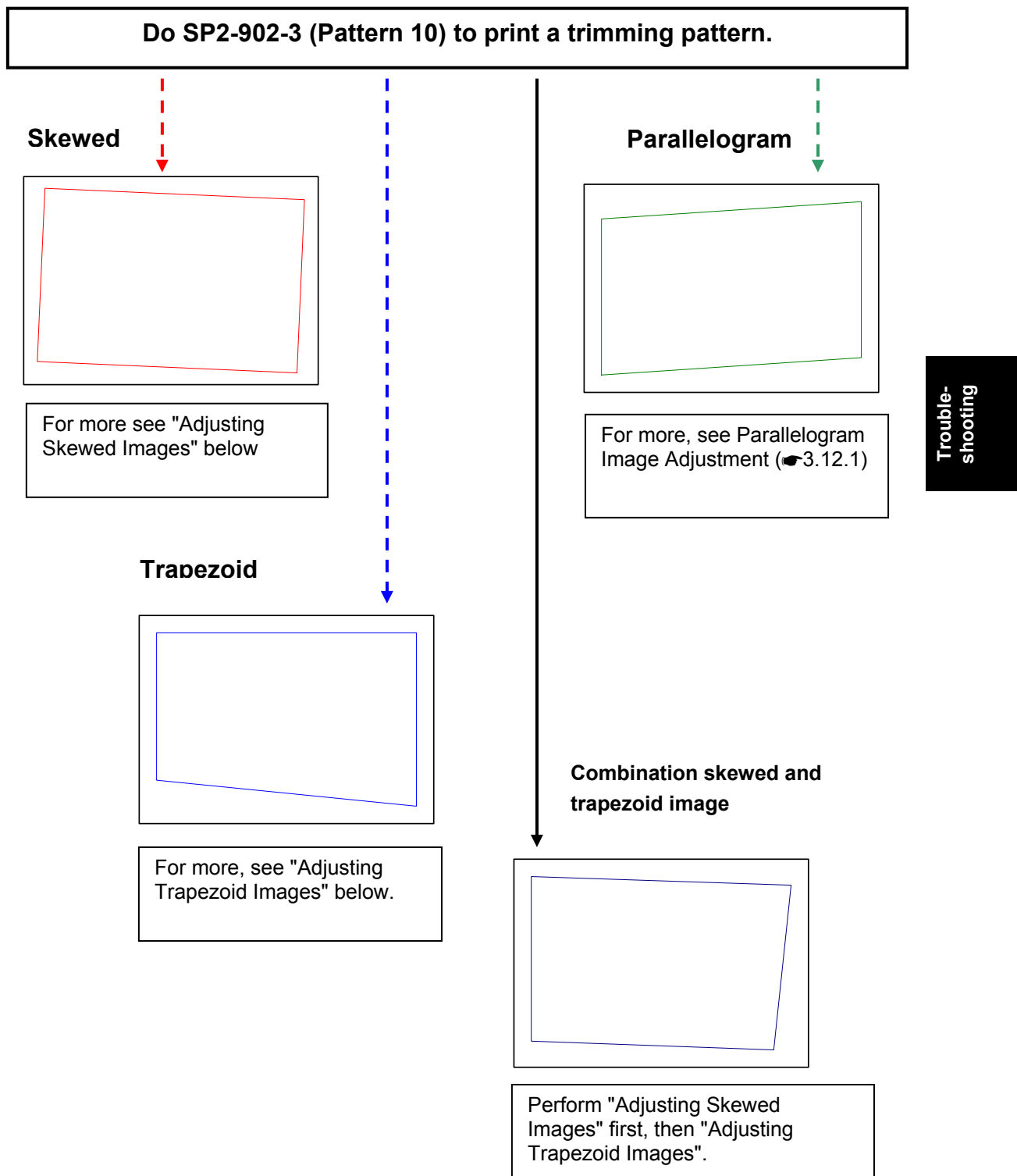
Trapezoid image may also appear in the opposite orientation.

Parallelogram Images

- Like skewed images, the leading/trailing edges and left/right edges are parallel to each other. But, the leading and trailing edges are not parallel to the paper's edges.



4.5.2 CHECKING IMAGES WITH THE TRIMMING PATTERN



4.5.3 CORRECTING THE IMAGES

Correcting Skewed Images

1. Test pattern (Trimming Pattern) mode check

Is the image skewed?

No **Yes**

1. Adjust the side fences. There must be no gap between the fences and the paper stack.
2. Adjust the paper buckle: SP1-003-1 and 2.

2. Platen mode check

Set an original flush against the left and rear scales and make a copy.

Does the image come out as a parallelogram?

No **Yes**

Attach the Scanner Holder (a supporter that is normally attached during shipping)

OR

Do **Procedure A** below.

3. ADF mode check

Feed an original through the ADF.

Is the image skewed?

No **Yes**

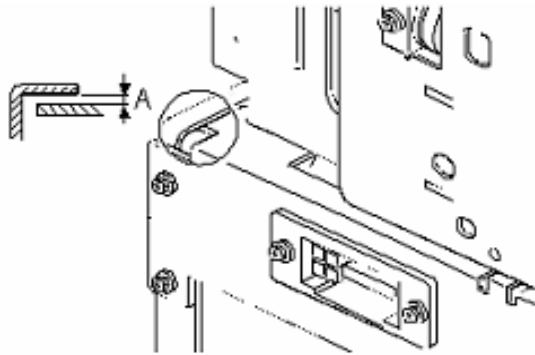
Do the front and rear transport rollers feed the original straight?

No **Yes**

Change the position of the right hinge screw to the longer hole, and make small position adjustments that are necessary.

Do **Procedure B** below.

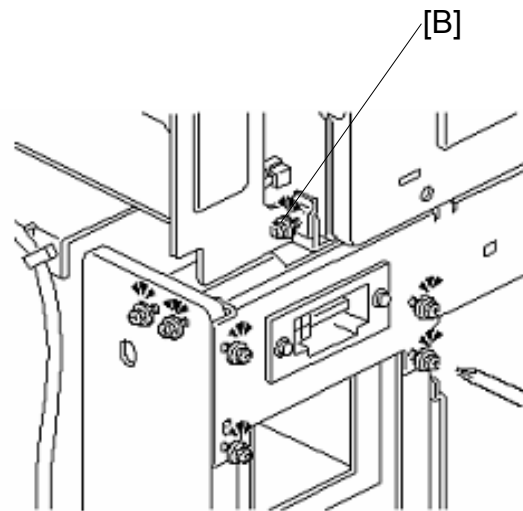
Procedure complete.

Procedure A (from Step 2 above):

B205T904.BMP

Rear, left upper side of machine

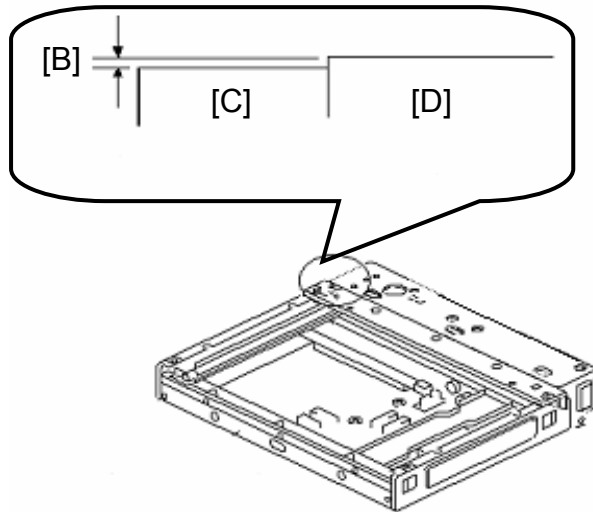
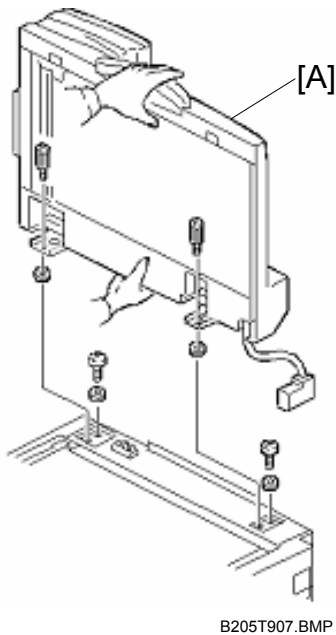
1. Remove the rear and left covers, then the left scanner cover.
2. Check to see if there is a gap between the scanner unit holder and frame at [A]
3. If there is no gap, the left front section of the scanner unit is lower than the standard position.



B205T905.BMP

4. Loosen all screws ($\phi 7$) [B].
5. Lift up the left front of unit until there is a 1 to 2 mm gap.
6. Tighten the 7 screws.
7. Insert a washer (#07080050, 1 mm thick) into gap [A].
8. Attach the washer in its position with an adhesive that sets quickly.
NOTE: This washer will also absorb small amounts of shock.
9. Check if the parallelogram image still appears.

**Trouble-
shooting**

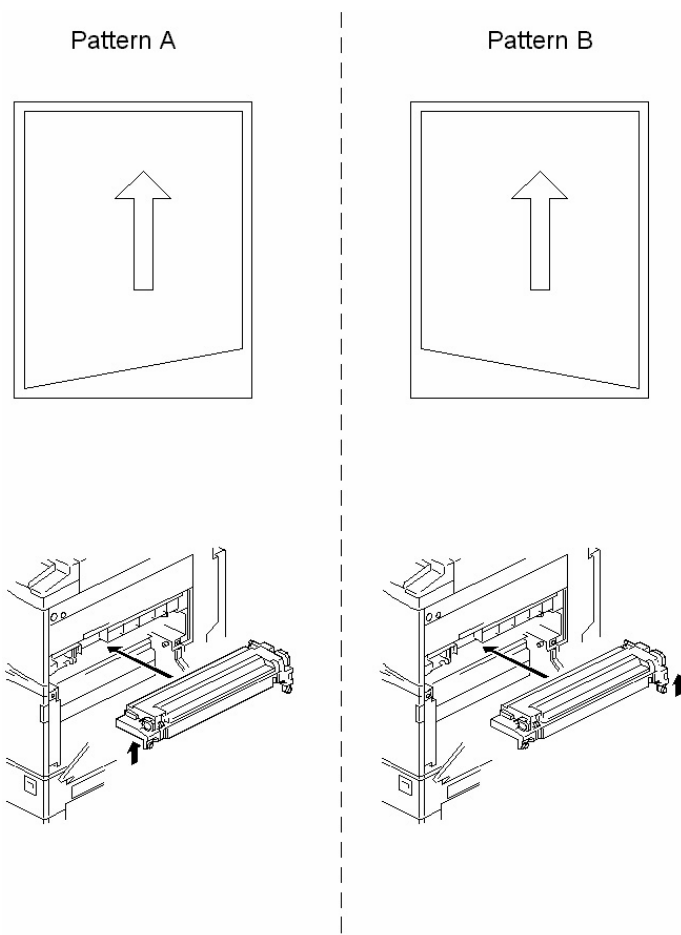
Procedure B (from Step 3 above):

1. Remove ADF [A], machine rear cover, scanner left cover, and scanner rear cover.
2. Measure the height difference [B] between the hinge bracket [C] and scanner housing [D].
3. If the difference is 0.5 mm or more:
Add a spacer ($t = 0.5$ to 0.8) between the hinge bracket (mainframe) and ADF left hinge, to lift the left side of the ADF
-or-
Adjust the stepped height difference between the hinge bracket and scanner housing until it is within 0 ± 0.3 mm.

NOTE: This is necessary because skew occurs when the hinge bracket more than 0.3 mm lower than the scanner housing.

Correcting Trapezoid Images

Procedure 1: Minor Adjustment of the Fusing Unit Height (front-to-rear)



Trouble-
shooting

1. Print out the SP2-902-003 Trimming Pattern (value: 10).
2. If the image is a pattern A trapezoid:
 - 1) Remove and reinstall the Fusing Unit.
 - 2) Tighten the left fixing screw while you push up the unit's left side (until it stops).
3. If the image is a pattern B trapezoid, do the same for the unit's right side.
4. If the image is still printed out as a trapezoid, do **Procedure 2** below.

Procedure 2: Minor Adjustment of the Fusing Unit Position (front-to-rear)

1. Remove the Fusing Unit, then add a washer ($t = 0.5$ to 1.6) to the front fixing screw. **Note:** This will increase the distance from the mainframe stay.

2. Check the image.

Still NG**OK**

Adjustment Complete.

3. Add more washers ($t = 0.5$ to 1.6 , as above).

Note: Too many washers can cause wrinkling in the paper.**Still NG****OK**

Adjustment Complete.

4. Remove the Fusing Unit and all the washers added in Steps 1 and 2 above. Then, add washer(s) **in the same way for the rear side**.

Recommended Washers: $t = 0.5$ 07080040Z or 07080040G $t = 0.8$ 07080050Z or 07080050G***Correcting Parallelogram Images***

Do the procedure described in Section 3.12.1 "Parallelogram Image Problems".

4.6 ELECTRICAL COMPONENT DEFECTS

4.6.1 SENSORS

Component (Symbol)	CN	Condition	Symptom
Scanner H.P	337-2 (SBCU)	Open	SC120 is displayed.
		Shorted	The CPU does not detect the scanner home position and the scanner motor does not stop.
Platen Cover	337-5 (SBCU)	Open	APS and ARE do not function correctly.
		Shorted	No symptom
Original Width	335-3, -4 (SBCU)	Open	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
		Shorted	
Original Length-1	335-8, -9 (SBCU)	Open	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
		Shorted	
Original Length-2	336-3 (SBCU)	Open	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
		Shorted	
Toner Density	321-3, -4 (SBCU)	Open	SC390 is displayed
		Shorted	
1st Paper End	306-2 (SBCU)	Open	The Paper End indicator lights even if paper is placed in the 1st paper tray.
		Shorted	The Paper End indicator does not light even if there is no paper in the 1st paper tray.
2nd Paper End	307-A2 (SBCU)	Open	The Paper End indicator lights even if paper is placed in the 2nd paper tray.
		Shorted	The Paper End indicator does not light even if there is no paper in the 2nd paper tray.
Image Density	321-3 (SBCU)	Open	SC392 is displayed (see note)
		Shorted	
Paper Over Flow	324-5 (SBCU)	Open	The paper overflow message is not displayed when the paper overfull condition exist.
		Shorted	The paper overflow message is displayed.
Paper Exit	324-2 (SBCU)	Open	The Paper Jam indicator will light whenever a copy is made.
		Shorted	The Paper Jam indicator lights even if there is no paper.
Upper Relay	306-5 (SBCU)	Open	The Paper Jam indicator will light whenever a copy is made.
		Shorted	The Paper Jam indicator lights even if there is no paper.

Trouble-
shooting

Component (Symbol)	CN	Condition	Symptom
Lower Relay	307-A5 (SBCU)	Open	The Paper Jam indicator will light whenever a copy is made.
		Shorted	The Paper Jam indicator lights even if there is no paper.
Registration	321-6 (SBCU)	Open	The Paper Jam indicator will light whenever a copy is made.
		Shorted	The Paper Jam indicator lights even if there is no paper.
1st Paper Lift	305-7 (SBCU)	Open	SC501 will be displayed.
		Shorted	Paper jam will occur during copying.
2nd Paper Lift	305-10 (SBCU)	Open	SC502 will be displayed.
		Shorted	Paper jam will occur during copying.
1st Paper Height – 1	307-B2 (SBCU)	Open	The CPU cannot determine the paper near-end condition properly.
		Shorted	
1st Paper Height – 2	307-B5 (SBCU)	Open	The CPU cannot determine the paper near-end condition properly.
		Shorted	
2nd Paper Height – 1	307-B9 (SBCU)	Open	The CPU cannot determine the paper near-end condition properly.
		Shorted	
2nd Paper Height – 2	307-B12 (SBCU)	Open	The CPU cannot determine the paper near-end condition properly.
		Shorted	

NOTE: An SC condition occurs only when a new PCU is being installed in the machine. During copying, if the ID sensor fails, the image density will be changed.

4.6.2 SWITCHES

Component (Symbol)	CN	Condition	Symptom
Main	281-1,2 (PSU)	Open	The machine does not turn on.
		Shorted	The machine does not turn off.
Right Upper Cover	324-8 (SBCU)	Open	The Cover Open indicator is not lit even if the right upper cover is opened.
		Shorted	The Cover Open indicator is lit even if the right upper cover is closed.
Right Cover	321-9 (SBCU)	Open	The Cover Open indicator is not lit even if the right cover is opened.
		Shorted	The Cover Open indicator is lit even if the right cover is closed.
Right Lower Cover	307-A8 (SBCU)	Open	The Cover Open indicator is not lit even if the right lower cover is opened.
		Shorted	The Cover Open indicator is lit even if the right lower cover is closed.
Upper Paper Size	308-1,2,4,5 (SBCU)	Open	The CPU cannot detect the proper paper size, and misfeeds may occur when a copy is made.
		Shorted	
Lower Paper Size	308-6,7,9,10 (SBCU)	Open	The CPU cannot detect the proper paper size, and misfeeds may occur when a copy is made.
		Shorted	
New PCU Detect	327-7 (SBCU)	Open	The TD sensor initial setting procedure is not performed when a new PCU is installed.
		Shorted	The TD sensor initial setting procedure is performed whenever the front cover is closed.
Front Cover Safety	311-2, 4 (SBCU)	Open	The Cover Open indicator is not lit even if the front cover is opened.
		Shorted	The Cover Open indicator is lit even if the front cover is closed.
Operation	110-1 (IPU)	Open	The LCD does not off even if the operation switch is turned off.
		Shorted	The LCD does not on even if the operation switch is turned on.

Trouble-
shooting

4.7 BLOWN FUSE CONDITIONS

Fuse	Rating		Symptom when turning on the main switch
	115 V	220 ~ 240 V	
PSU			
FU1	15 A/250 V	8 A/250V	No response.
FU2	8 A/125 V	5 A/250 V	No response
FU3	2 A/125 V	1 A/250V	Anti-condensation/Tray Heater does not turn on.
FU4	6.3 A/125 V	6.3 A/250V	Optional finisher, bridge unit, and shift tray does not work then SC792 is displayed.
FU5	6.3 A/125 V	6.3 /250 V	All motors do not rotate. The "Cover Open" and SC indicators light.
FU6	6.3 A/125 V	6.3 A/250V	The touch panel does not turn on, and all motors (except scanner motor) do not rotate.
FU7	5 A/250 V	5 A/250 V	No response
FU8	5 A/250 V	5 A/250 V	No response

5. SERVICE TABLES

5.1 SERVICE PROGRAM MODE

The service program (SP) mode is used to check electrical data, change modes, and adjust values.

CAUTION

Never turn off the main power switch when the power LED is lit or flashing. To avoid damaging the hard disk or memory, press the operation switch to switch the power off, wait for the power LED to go off, and then switch the main power switch off.

5.1.1 SERVICE MODE LOCK/UNLOCK

At locations where the machine contains sensitive data, the customer engineer cannot operate the machine until the Administrator turns the service mode lock off. This function makes sure that work on the machine is always done with the permission of the Administrator.

1. If you cannot go into the SP mode, ask the Administrator to log in with the User Tool and then set "Service Mode Lock" to OFF. After he or she logs in:
[User Tools] > System Settings > Administrator Tools > Service Mode Lock > OFF
 - This unlocks the machine and lets you get access to all the SP codes.
 - The service technician can do servicing on the machine and turn the machine off and on. It is not necessary to ask the Administrator to log in again each time the machine is turned on.
2. If you must use the printer bit switches, go into the SP mode and set **SP5169** to "1".
3. After machine servicing is completed:
 - Change **SP5169** from "1" to "0".
 - Turn the machine off and on.
 - Tell the administrator that you completed servicing the machine.
 - The administrator will then set the "Service Mode Lock" to ON.

5.1.2 SERVICE PROGRAM MODE OPERATION

The service program mode is used to check electrical data, change modes, and adjust values. Two service program modes are provided:

- **SP Mode (Service).** Includes all the options in the SP displays for normal maintenance and adjustments.
- **SSP Mode (Special Service).** Includes the normal SP modes and *some additional options in the SP displays not required for normal settings and adjustments.* (Most are marked “DFU” in the following tables.) Do not change these important settings needlessly. For details, contact your supervisor.

Entering and Exiting SP mode



Press the Clear Mode key.



Use the keypad to enter “107”.



Hold down Clear/Stop for at least 3 seconds.

Enter the Service Mode.

To enter the Normal Service Mode:

Copy SP On the touch-panel, press Copy SP.

To enter the Special Service Mode:

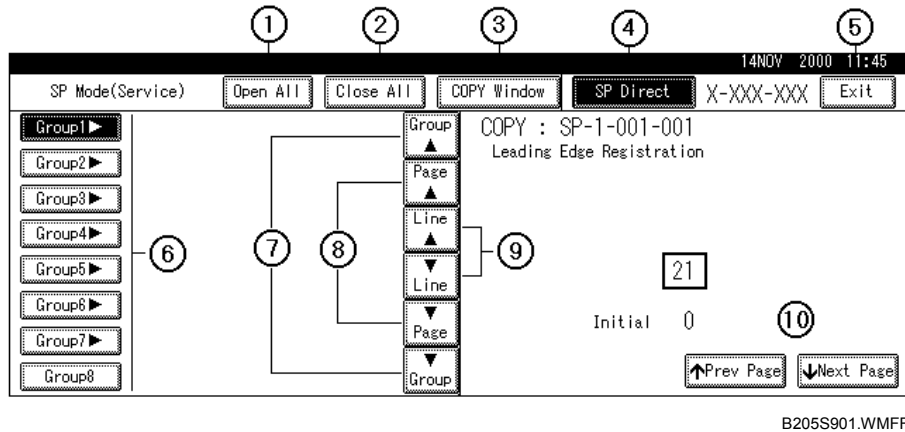
Copy SP Hold down # and then press Copy SP.

Exit Press Exit twice to return to the copy window.

NOTE: Use SP2902 to perform test pattern printing. (➡5.1.4)

SP Mode Button Summary

Here is a short summary of the touch-panel buttons.



- ① Opens all SP groups and sublevels.
- ② Closes all open groups and sublevels and restores the initial SP mode display.
- ③ Opens the copy window (copy mode) so you can make test copies. To return to the SP mode screen, press SP Mode (highlighted) in the copy window.
- ④ Enter the SP code directly with the number keys if you know the SP number and then press $\#$. (SP Mode must be highlighted before you can enter the number. Just press SP Mode if it is not highlighted.)
- ⑤ Press twice to leave the SP mode and return to the copy window to resume normal operation.
- ⑥ Press any Group number to open a list of SP codes and titles for that group. For example, to open the SP code list for SP1nnn, press Group1. If an SP has sublevels, touch the appropriate button to expand the list.
- ⑦ Press to scroll the display to the previous or next group.
- ⑧ Press to scroll to the previous or next display in segments the size of the screen display (page).
- ⑨ Press to scroll the display to the previous or next line, line by line.
- ⑩ Press to move the highlight on the left to the previous or next selection in the list.

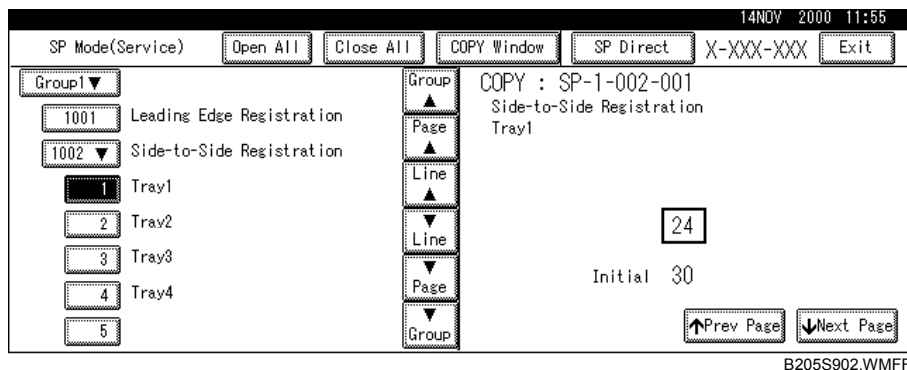
Switching Between SP Mode and Copy Mode for Test Printing

- 1) In the SP mode, select the test print and then press Copy Window.
- 2) Use the copy window (copier mode), to select the appropriate settings (paper size, etc.) for the test print.
- 3) Press Start (Ⓢ) to execute the test print.
- 4) Press SP Mode (highlighted) to return to the SP mode screen and repeat from step 1.

Selecting the Program Number

Program numbers have two or three levels.

1. Before you begin, refer to the Service Tables to find the SP that you want to adjust. (☛ 5.1.3)
2. Press the Group number on the left side SP Mode window that contains the SP that you want to adjust.
3. Use the scrolling buttons in the center of the SP mode window to display the SP number that you want to open, and then press that number to expand the list.
4. Use the center touch-panel buttons to scroll to the number and title of the item that you want to set and press. The small entry box on the right is activated and displays the default or the current setting below.



NOTE: Refer to the Service Tables for the range of allowed settings. (☛ 5.1.3)


1. To enter a setting
 - Press (Ⓢ) to toggle between plus and minus and then use the keypad to enter the appropriate number. The number you enter writes over the previous setting.
 - Press (#) to enter the setting. (If you enter a number that is out of range, the key press is ignored.)
 - When you are prompted to complete the selection, press Yes.
2. If you need to perform a test print, press Copy Window to open the copy window and select the settings for the test print. Press Start (Ⓢ) twice, and then press SP Mode (highlighted) in the copy window to return to the SP mode display.
3. When you are finished, press Exit twice to return to the copy window.


5.1.3 SERVICE PROGRAM MODE TABLES

Service Table Key

Notation	What it means
[range / default / step]	Example: [-9 ~ +9 / +3.0 / 0.1 mm step]. The setting can be adjusted in the range ± 9 , the setting is reset to +3.0 after an NVRAM reset, and the value can be changed in 0.1 mm steps with each key press.
italics	Comments added for reference.
*	Value stored in NVRAM. After a RAM reset, this default value (factory setting) is restored.
1111	An SP number set in bold-italic denotes a “Special Service Program” mode setting that appears only after entering the SP mode by pressing \oplus and Copy SP together. (➡ 5.1.2)
DFU	Denotes “Design or Factory Use”. Do not change this value.
Japan only	The feature or item is for Japan only. Do not change this value.
(S)	Sideways feed direction
(L)	Lengthwise feed direction

SP1XXX: Feed

1001*	Leading Edge Registration	
1001 1	Paper Tray Feed	Adjusts the printing leading edge registration from each paper feed station using the Trimming Area Pattern (SP2902-003 No. 10). [+9.0 ~ -9.0 / +0.0 / 0.1 mm/step] Use the  key to toggle between + and - before entering the value. The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details.
1001 2	By-pass Feed	
1001 3	Duplex, Side2	

1002*	Side-to-Side Registration	
1002 1	Tray 1	Adjusts the printing side-to-side registration from each paper feed station using the Trimming Area Pattern (SP2902-003 No. 10). [+9.0 ~ -9.0 / +0.0 / 0.1 mm/step] Use the  key to toggle between + and - before entering the value. The specification is 2 ± 1.5 mm. See "Replacement and Adjustment - Copy Adjustment" for details.
1002 2	Tray 2	
1002 3	Tray 3 (Optional PFU Tray 1, or LCT)	
1002 4	Tray 4 (Optional PFU Tray 2)	
1002 5	By-pass	
1002 6	Duplex Side 2	

1003*	Paper Feed Timing	
1003 1	Tray 1	Adjusts the paper feed clutch timing at registration. The paper feed clutch timing determines the amount of paper buckle at registration. (A larger setting leads to more buckling.) [0 ~ 10 / 5 / 1 mm/step]
1003 2	Tray 2/3/4 By-pass	
1003 3	Duplex Side 2	

1007	By-pass Paper Size Display	Displays the by-pass paper width sensor output.
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1103	Fusing Idling	
	Switches fusing idling on/off. [0 = Off / 1 = On / 2 = Off plus machine temperature check] Switch on if fusing on the 1st and 2nd copies is incomplete (this may occur if the room is cold.)	

1105*	Fusing Temperature Adjustment	
1105 1	Roller Center	Adjusts the fusing temperature at the center and both ends of the hot roller for normal printing. [120 ~ 200 / 180 / 1°C/step]
1105 2	Roller Ends	
1105 3	Energy Saver	Adjusts the fusing temperature at the center and both ends of the hot roller for energy saver mode. [0 ~ 160 / 150 / 1°C/step]
1105 4	Thick Paper - Center	Adjusts the additional fusing temperature for thick paper for the 2nd paper tray and for the bypass tray. [0 ~ 30 / 15 / 1°C/step]
1105 5	Thick Paper - Ends	
1105 6	After Warming-up - Center	Adjusts the fusing temperature at the center of the hot roller after the machine has warmed up. [120 ~ 200 / 180 / 1°C/step]
1105 7	After Warming-up - Ends	Adjusts the fusing temperature at both ends of the hot roller after the machine has warmed up. [120 ~ 200 / 185 / 1°C/step]
1105 8	After Warming-up - No. of Pages	In this machine, fusing temperature is kept 10°C higher than the normal temperature for a number of pages after the machine has warmed up. This SP selects the number of pages made at this temperature. See Detailed Section Descriptions – Fusing for more details. [0 ~ 10 / 3 / 1 page/step]
1105 9	After Warming-up - Times	In this machine, fusing temperature is kept 10°C higher than the normal temperature for a short while after the machine been warmed up. This SP selects the length of time that this temperature is used. See Detailed Section Descriptions – Fusing for more details. [0 ~ 180 / 60 / 1s/step]

1106	Fusing Temp. Display	
1106 1	Roller Center	Displays the fusing temperature for the center or both ends of the hot roller.
1106 2	Roller Ends	
1106 3	In the Machine at Power On	Displays the temperature in the machine at power on. <i>This temperature is monitored by the thermistor on the SBCU board.</i>

1108*	Fusing Soft Start Setting	
	Selects whether the fusing temperature control cycle is 1 or 3 seconds. <i>If this is "1 (3 s)", the power supply fluctuation caused by the fusing lamp turning on is less often.</i> [0 = 1 s / 1 = 2 s] Default: 0 = N. America, Taiwan, 1 = Europe/Asia	

1109	Fusing Nip Band Check	
	Checks the fusing nip band (➡5.1.11) [1 = Start / 0 = Stop]	



1903*	Feed Clutch Re-energize	
	Adjusts the paper feed amount allowed by the clutch after correcting the skew at registration. When paper jams occur after restarting paper feed after registration, increase the value to help the registration roller feed the paper.	
1903 1	By-pass Feed	[0 ~ 10 / 6 / 1 mm/step]
1903 2	Tray 1 Feed	[0 ~ 10 / 0 / 1 mm/step]
1903 3	Other Trays	

1902*	AC Frequency Display
	Displays the AC frequency for fusing temperature control.

1905*	Tray Paper Full Detection
	Determines whether or not to detect if the built-in copy tray is full. [0 = No / 1 = Yes]

1906*	Tray Paper Full Timer
	Adjusts the time that the paper overflow sensor must remain on before a message appears on the LCD. The sensor may be switched on and off again if the paper is curled, giving a false tray full detection. This SP prevents this problem. [100 ~ 5000 / 500 / 10 ms/step] <i>This SP mode is used when SP1905 is set to 1.</i>

1908*	1st Bottom Plate Pressure Adjustment	
1908 1	Normal Size	<p>If a middle size threshold is not stored with SP1908-9, this SP adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1908-8.</p> <p>If a middle size threshold is stored with SP1908-9, then this SP adjusts the motor reverse time for sizes larger than the middle size.</p> <p>Do not input a value greater than 1200.</p> <p><i>Use this SP when a paper feed problem occurs from the 1st paper tray.</i></p> <p><i>See "Paper Lift Mechanism" for details on SP1908.</i></p> <p>[0 ~ 2000 / 200 / 1 ms/step]</p>
1908 2	Small Size	<p>Adjusts the upper paper lift motor reverse time for paper of the same size as or smaller than the small size threshold set with SP1908-8.</p> <p>Do not input a value greater than 1200.</p> <p><i>Use this SP when a paper feed problem occurs from the 1st paper tray.</i></p> <p><i>See "Paper Lift Mechanism" for details on SP1908.</i></p> <p>[0 ~ 2000 / 600 / 1 ms/step]</p>
1908 3	Middle Size	<p>Adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1908-8, up to and including the middle size threshold set with SP1908-9. If a middle size threshold is not stored with SP1908-9, this SP is not used.</p> <p>Do not input a value greater than 1200.</p> <p><i>Use this SP when a paper feed problem occurs from the 1st paper tray.</i></p> <p><i>See "Paper Lift Mechanism" for details on SP1908.</i></p> <p>[0 ~ 2000 / 200 / 1 ms/step]</p>

1908	1st Bottom Plate Pressure Re-adjustment
1908 4	<p>Small Size</p> <p>Adjusts the upper paper lift motor forward rotation time for paper of the same size as or smaller than the small size threshold set with SP1908-8. The motor rotates forward when the remaining paper amount is lower than the value of SP1908-6.</p> <p><i>Use this SP when a paper feed problem occurs when paper in the 1st paper tray is running low.</i></p> <p><i>See "Paper Lift Mechanism" for details on SP1908.</i></p> <p>[0 ~ 2000 / 400 / 1 ms/step]</p>
1908 5	<p>Middle Size</p> <p>Adjusts the upper paper lift motor forward rotation time for paper sizes larger than the small size threshold set with SP1908-8, up to and including the middle size threshold set with SP1908-9.</p> <p>The motor rotates forward when the amount of remaining paper is lower than the value of SP1908-7.</p> <p>If a middle size threshold is not stored with SP1908-9, this SP is not used.</p> <p><i>Use this SP when a paper feed problem occurs when paper in the 1st paper tray is running low.</i></p> <p><i>See "Paper Lift Mechanism" for details on SP1908.</i></p> <p>[0 ~ 2000 / 300 / 1 ms/step]</p>
	1st Paper Amount
1908 6	<p>Small Size</p> <p>Selects the remaining paper amount limit for use with SP1908-4.</p> <p><i>Set this SP to 2 or 3 when a paper feed problem occurs before near-end.</i></p> <p><i>See "Paper Lift Mechanism" for details on SP1908.</i></p> <p>[0 = None (Empty) / 1 = Near End / 2 = 25% / 3 = 75%]</p>
1908 7	<p>Middle Size</p> <p>Selects the remaining paper amount limit for use with SP1908-5.</p> <p><i>Set this SP to 2 or 3 when a paper feed problem occurs before near-end.</i></p> <p><i>See "Paper Lift Mechanism" for details on SP1908.</i></p> <p>[0 = None (Empty) / 1 = Near End / 2 = 25% / 3 = 75%]</p>
	1st Paper Size
1908 8	<p>1st Small Paper Size Setting</p> <p>Selects the small size threshold for the 1st paper tray.</p> <p>"0" means that this setting is not used.</p> <p><i>The size used by SP1908 is determined by paper width. See "Paper Lift Mechanism" for details on SP1908.</i></p> <p>[0 = None (Not used) / 1 = HLT/A5 / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]</p>
1908 9	<p>1st Middle Paper Size Setting</p> <p>Selects the middle size threshold for the upper tray.</p> <p>"0" means that this setting is not used.</p> <p><i>The value must be larger than the small size threshold (SP1908-8). The size used by SP1908 is determined by paper width. See "Paper Lift Mechanism" for details on SP1908.</i></p> <p>[0 = None (Not used) / 1 = HLT/A5 / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]</p>

1909*	2nd Bottom Plate Pressure Adjustment
1909 1	<p>Normal Size</p> <p>If a middle size threshold is not stored with SP1909-9, this SP adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1909-8.</p> <p>If a middle size threshold is stored with SP1909-9, then this SP adjusts the motor reverse time for sizes larger than the middle size.</p> <p>Do not input a value greater than 1,200.</p> <p><i>Use this SP when a paper feed problem occurs from the 2nd paper tray.</i></p> <p><i>See "Paper Lift Mechanism" for details on SP1909.</i></p> <p>[0 ~ 2000 / 200 / 1 ms/step]</p>
1909 2	<p>Small Size</p> <p>Adjusts the upper paper lift motor reverse time for paper of the same size as or smaller than the small size threshold set with SP1909-8.</p> <p>Do not input a value greater than 1,200.</p> <p><i>Use this SP when a paper feed problem occurs from the 2nd paper tray.</i></p> <p><i>See "Paper Lift Mechanism" for details on SP1909.</i></p> <p>[0 ~ 2000 / 600 / 1 ms/step]</p>
1909 3	<p>Middle Size</p> <p>Adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1909-8, up to and including the middle size threshold set with SP1909-9. If a middle size threshold is not stored with SP1909-9, this SP is not used.</p> <p>Do not input a value greater than 1200.</p> <p><i>Use this SP when a paper feed problem occurs from the 2nd paper tray.</i></p> <p><i>See "Paper Lift Mechanism" for details on SP1909.</i></p> <p>[0 ~ 2000 / 200 / 1 ms/step]</p>
	2nd Bottom Plate Pressure Re-adjustment
1909 4	<p>Small Size</p> <p>Adjusts the upper paper lift motor forward rotation time for paper of the same size as or smaller than the small size threshold set with SP1909-8. The motor rotates forward when the remaining paper amount is lower than the value of SP1909-6.</p> <p><i>Use this SP when a paper feed problem occurs when paper in the 2nd paper tray is running low.</i></p> <p><i>See "Paper Lift Mechanism" for details on SP1909.</i></p> <p>[0 ~ 2000 / 400 / 1 ms/step]</p>
1909 5	<p>Middle Size</p> <p>Adjusts the upper paper lift motor forward rotation time for paper sizes larger than the small size threshold set with SP1909-8, up to and including the middle size threshold set with SP1909-9.</p> <p>The motor rotates forward when the remaining paper amount is lower than the value of SP1909-7.</p> <p>If a middle size threshold is not stored with SP1909-9, this SP is not used.</p> <p><i>Use this SP when a paper feed problem occurs when paper in the 2nd paper tray is running low.</i></p> <p><i>See "Paper Lift Mechanism" for details on SP1909.</i></p> <p>[0 ~ 2000 / 300 / 1 ms/step]</p>

	2nd Paper Amount
1909 6	<p>Small Size</p> <p>Selects the remaining paper amount limit for use with SP1909-4. <i>Set this SP to 2 or 3 when a paper feed problem occurs before near-end.</i> <i>See "Paper Lift Mechanism" for details on SP1909.</i> [0 = None (Empty) / 1 = Near End / 2 = 25% / 3 = 75%]</p>
1909 7	<p>Middle Size</p> <p>Selects the remaining paper amount limit for use with SP1909-5. <i>Set this SP to 2 or 3 when a paper feed problem occurs before near-end.</i> <i>See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1909.</i> [0 = None (Empty) / 1 = Near End / 2 = 25% / 3 = 75%]</p>
	2nd Paper Size
1909 8	<p>2nd Small Paper Size Setting</p> <p>Selects the small size threshold for the 2nd paper tray. "0" means that this setting is not used. <i>The size used by SP1909 is determined by paper width. See "Paper Lift Mechanism" for details on SP1909.</i> [0 = None (Not used) / 1 = HLT/A5 / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]</p>
1909 9	<p>2nd Middle Paper Size Setting</p> <p>Selects the middle size threshold for the upper tray. "0" means that this setting is not used. <i>The value must be larger than the small size threshold (SP1909-8). The size used by SP1909 is determined by paper width. See "Paper Lift Mechanism" for details on SP1909.</i> [0 = None (Not used) / 1 = HLT/A5 / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]</p>
1910*	3rd Bottom Plate Pressure Adjustment
1910 1	<p>Normal Size (Optional PFU)</p> <p>If a middle size threshold is not stored with SP1910-9, this SP adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1910-8. If a middle size threshold is stored with SP1910-9, then this SP adjusts the motor reverse time for sizes larger than the middle size. Do not input a value greater than 1200. <i>Use this SP when a paper feed problem occurs from the 3rd paper tray.</i> <i>See "Optional Paper Tray Unit – Paper Lift Mechanism" for details on SP1910.</i> [0 ~ 2000 / 200 / 1 ms/step]</p>
1910 2	<p>Small Size (Optional PFU)</p> <p>Adjusts the upper paper lift motor reverse time for paper of the same size as or smaller than the small size threshold set with SP1910-8. Do not input a value greater than 1200. <i>Use this SP when a paper feed problem occurs from the 3rd paper tray.</i> <i>See "Optional Paper Tray Unit – Paper Lift Mechanism" for details on SP1910.</i> [0 ~ 2000 / 600 / 1 ms/step]</p>
1910 3	<p>Middle Size (Optional PFU)</p> <p>Adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP1910-8, up to and including the middle size threshold set with SP1910-9. If a middle size threshold is not stored with SP1910-9, this SP is not used. Do not input a value greater than 1200. <i>Use this SP when a paper feed problem occurs from the 3rd paper tray.</i> <i>See "Optional Paper Tray Unit – Paper Lift Mechanism" for details on SP1910.</i> [0 ~ 2000 / 200 / 1 ms/step]</p>

3rd Bottom Plate Pressure Re-adjustment	
1910 4	<p>Small Size (Optional PFU)</p> <p>Adjusts the upper paper lift motor forward rotation time for paper of the same size as or smaller than the small size threshold set with SP1910-8. The motor rotates forward when the remaining paper amount is lower than the value of SP1910-6. <i>Use this SP when a paper feed problem occurs when paper in the 3rd paper tray is running low.</i> <i>See "Optional Paper Tray Unit – Paper Lift Mechanism" for details on SP1910.</i> [0 ~ 2000 / 400 / 1 ms/step]</p>
1910 5	<p>Middle Size (Optional PFU)</p> <p>Adjusts the upper paper lift motor forward rotation time for paper sizes larger than the small size threshold set with SP1910-8, up to and including the middle size threshold set with SP1910-9. The motor rotates forward when the remaining paper is lower than the value of SP1910-7. If a middle size threshold is not stored with SP1910-9, this SP is not used. <i>Use this SP when a paper feed problem occurs when paper in the 3rd paper tray is running low.</i> <i>See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1910.</i> [0 ~ 2000 / 300 / 1 ms/step]</p>
3rd Paper Amount	
1910 6	<p>Small Size (Optional PFU)</p> <p>Selects the remaining paper amount limit for use with SP1910-4. <i>Set this SP to 2 or 3 when a paper feed problem occurs before near-end.</i> <i>See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1910.</i> [0 = None (Empty) / 1 = Near End / 2 = 25% / 3 = 75%]</p>
1910 7	<p>Middle Size (Optional PFU)</p> <p>Selects the remaining paper amount limit for use with SP1910-5. <i>Set this SP to 2 or 3 when a paper feed problem occurs before near-end.</i> <i>See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1910.</i> [0 = None (Empty) / 1 = Near End / 2 = 25% / 3 = 75%]</p>
3rd Paper Size	
1910 8	<p>3rd Small Paper Size Setting (Optional PFU)</p> <p>Selects the small size threshold for the 3rd paper tray. "0" means that this setting is not used. <i>The size used by SP1910 is determined by paper width. See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1910.</i> [0 = None (Not used) / 1 = HLT/A5 / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]</p>
1910 9	<p>3rd Middle Paper Size Setting (Optional PFU)</p> <p>Selects the middle size threshold for the upper tray. "0" means that this setting is not used. <i>The value must be larger than the small size threshold (SP1910-8). The size used by SP1910 is determined by paper width. See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1910.</i> [0 = None (Not used) / 1 = HLT/A5 / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]</p>

1911*	4th Bottom Plate Pressure Adjustment
1911 1	<p>Normal Size (Optional PFU)</p> <p>If a middle size threshold is not stored with SP19119, this SP adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP19118.</p> <p>If a middle size threshold is stored with SP19119, then this SP adjusts the motor reverse time for sizes larger than the middle size.</p> <p>Do not input a value greater than 1200.</p> <p><i>Use this SP when a paper feed problem occurs from the 4th paper tray.</i></p> <p><i>See "Optional Paper Tray Unit – Paper Lift Mechanism" for details on SP1911.</i></p> <p>[0 ~ 2000 / 200 / 1 ms/step]</p>
1911 2	<p>Small Size (Optional PFU)</p> <p>Adjusts the upper paper lift motor reverse time for paper of the same size as or smaller than the small size threshold set with SP19118.</p> <p>Do not input a value greater than 1200.</p> <p><i>Use this SP when a paper feed problem occurs from the 4th paper tray.</i></p> <p><i>See "Optional Paper Tray Unit – Paper Lift Mechanism" for details on SP1911.</i></p> <p>[0 ~ 2000 / 600 / 1 ms/step]</p>
1911 3	<p>Middle Size (Optional PFU)</p> <p>Adjusts the upper paper lift motor reverse time for paper sizes larger than the small size threshold set with SP19118, up to and including the middle size threshold set with SP19119. If a middle size threshold is not stored with SP19119, this SP is not used.</p> <p>Do not input a value greater than 1200.</p> <p><i>Use this SP when a paper feed problem occurs from the 4th paper tray.</i></p> <p><i>See "Optional Paper Tray Unit – Paper Lift Mechanism" for details on SP1911.</i></p> <p>[0 ~ 2000 / 200 / 1 ms/step]</p>
	4th Bottom Plate Pressure Re-adjustment
1911 4	<p>Small Size (Optional PFU)</p> <p>Adjusts the upper paper lift motor forward rotation time for paper of the same size as or smaller than the small size threshold set with SP19118. The motor rotates forward when the remaining paper amount is lower than the value of SP19116.</p> <p><i>Use this SP when a paper feed problem occurs when paper in the 4th paper tray is running low.</i></p> <p><i>See "Optional Paper Tray Unit – Paper Lift Mechanism" for details on SP1911.</i></p> <p>[0 ~ 2000 / 400 / 1 ms/step]</p>
1911 5	<p>Middle Size (Optional PFU)</p> <p>Adjusts the upper paper lift motor forward rotation time for paper sizes larger than the small size threshold set with SP19118, up to and including the middle size threshold set with SP19119.</p> <p>The motor rotates forward when the remaining paper amount is lower than the value of SP19117.</p> <p>If a middle size threshold is not stored with SP19119, this SP is not used.</p> <p><i>Use this SP when a paper feed problem occurs when paper in the 4th paper tray is running low.</i></p> <p><i>See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1911.</i></p> <p>[0 ~ 2000 / 300 / 1 ms/step]</p>

	4th Paper Amount
1911 6	Small Size (Optional PFU) Selects the remaining paper amount limit for use with SP19114. <i>Set this SP to 2 or 3 when a paper feed problem occurs before near-end.</i> <i>See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1911.</i> [0 = None (Empty) / 1 = Near End / 2 = 25% / 3 = 75%]
1911 7	Middle Size (Optional PFU) Selects the remaining paper amount limit for use with SP19115. <i>Set this SP to 2 or 3 when a paper feed problem occurs before near-end.</i> <i>See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1911.</i> [0 = None (Empty) / 1 = Near End / 2 = 25% / 3 = 75%]
	4th Paper Size
1911 8	4th Small Paper Size Setting (Optional PFU) Selects the small size threshold for the 4th paper tray. "0" means that this setting is not used. <i>The size used by SP1911 is determined by paper width. See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1911.</i> [0 = None (Not used) / 1 = HLT/A5 / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]
1911 9	4th Middle Paper Size Setting (Optional PFU) Selects the middle size threshold for the upper tray. "0" means that this setting is not used. <i>The value must be larger than the small size threshold (SP19118). The size used by SP1911 is determined by paper width. See "Optional Paper Tray Unit - Paper Lift Mechanism" for details on SP1911.</i> [0 = None (Not used) / 1 = HLT/A5 / 2 = A4 / 3 = LT / 4 = DLT / 5 = A3]
n	
1912*	Tray Motor Reverse Time Adjusts the tray motor reverse time. <i>The tray motor reverses when the tray is pulled out. The tray can be put back in the machine without damage while the motor reverses.</i> [0 ~ 9000 / 1700 / 1 ms/step]
1995	Paper Height Sensor Check DFU These sensors display the status of the paper height sensors for the 1st and 2nd Paper Trays.
1995 1	1st Paper Tray 1:OK 0:NG
1995 2	2nd Tray 1:OK 0:NG
1997	Jam Detect for Manual Tray Sets the jam detection method for the bypass tray. [0 ~ 1/ 0 / 1] 0:Normal Detection. Detects a jam if the size of the paper fed is shorter or longer than the size selected for the bypass tray. 1:Simple Detection. Detects a jam if the size of the paper fed is longer than the size set for the bypass tray.

SP2XXX: Drum

2001*	Charge Roller Bias Adjustment
2001 1*	Printing Adjusts the voltage applied to the charge roller during printing. <i>This value will be changed automatically when the charge roller bias correction is performed.</i> <i>Note that if this value is changed, the charge roller voltage will be corrected based on the new voltage.</i> [2100 ~ 1500 / -1700 / 1 V/step]
2001 2*	ID Sensor Pattern Adjusts the voltage applied to the charge roller when making the Vsdp ID sensor pattern (for charge roller bias correction). <i>The actual charge roller voltage is this value plus the value of SP20011.</i> [0 ~ 400 / 200 / 1 V/step]
2001 3	Temporary Input Inputs the charge roller voltage temporarily for test purposes. Do not change the value. [0 ~ -2500 / 0 / 1 V/step]

2005*	Charge Roller Bias Correction
2005 1	Vsdp Min Adjusts the lower threshold value for the charge roller correction. <i>When the value of Vsdp/Vsg is less than this value, the charge roller voltage increases by 50V (e.g. from -500 to -550). The size of the increase depends on SP2005 3.</i> [0 ~ 100 / 90 / 1%/step]
2005 2	Vsdp Max Adjusts the upper threshold value for the charge roller correction. <i>When the value of Vsdp/Vsg is greater than this value, the charge roller voltage decreases by 50V (e.g. from -550 to -500). The size of the decrease depends on SP2005 3.</i> [0 ~ 100 / 95 / 1 %/step]
2005 3	Charge Roller Bias Correction Adjusts the size of the charge roller voltage correction. [0 ~ 200 / 50 / 1 V/step]

2101*	Erase Margin Adjustment	
2101 1	Leading Edge	
		Adjusts the leading edge erase margin. <i>The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details.</i> [0.0 ~ 9.0 / 3.0 / 0.1 mm/step]
2101 2	Trailing Edge – Small Paper	
		Adjusts the trailing edge erase margin for paper of length 216 mm or less. <i>The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details.</i> [0.0 ~ 9.0 / 2.0 / 0.1 mm/step]
2101 3	Trailing Edge – Middle Paper	
		Adjusts the trailing edge erase margin for paper of length 216.1 ~ 297 mm. <i>The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details.</i> [0.0 ~ 9.0 / 3.0 / 0.1 mm/step]
2101 4	Trailing Edge – Large Paper	
		Adjusts the trailing edge erase margin for paper longer than 297 mm. <i>The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details.</i> [0.0 ~ 9.0 / 4.0 / 0.1 mm/step]
2101 5	Left Side	
		Adjusts the left edge erase margin. <i>The specification is 2 ± 1.5 mm. See "Replacement and Adjustment - Copy Adjustment" for details.</i> [0.0 ~ 9.0 / 2.0 / 0.1 mm/step]
2101 6	Right Side	
		Adjusts the right edge erase margin. <i>The specification is $2 + 2.5/-1.5$ mm. See "Replacement and Adjustment - Copy Adjustment" for details.</i> [0.0 ~ 9.0 / 2.0 / 0.1 mm/step]
2101 7	Rear – Trailing Edge (Duplex 2nd Side)	
		Adjusts the trailing edge erase margin on the reverse side of duplex copies. The actual trailing edge erase margin on the reverse side is this value plus the value of SP21012 or 3 or 4. <i>The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details.</i> [0.0 ~ 9.0 / 1.2 / 0.1 mm/step]
2101 8	Rear – Left Side (Duplex 2nd Side)	
		Adjusts the left side erase margin on the reverse side of duplex copies. The actual left side erase margin on the reverse side is this value plus the value of SP21015. <i>The specification is 2 ± 1.5 mm. See "Replacement and Adjustment - Copy Adjustment" for details.</i> [0.0 ~ 9.0 / 0.3 / 0.1 mm/step]
2101 9	Rear – Right Side (Duplex 2nd Side)	
		Adjusts the right side erase margin on the reverse side of duplex copies. The actual right side erase margin on the reverse side is this value plus the value of SP21016. <i>The specification is $2 + 2.5/-1.5$ mm. See "Replacement and Adjustment - Copy Adjustment" for details.</i> [0.0 ~ 9.0 / 0.3 / 0.1 mm/step]

2101 10	Printer - Rear Trailing Edge
	<p>In printer mode, adjusts the trailing edge erase margin on the reverse side of duplex copies.</p> <p>The actual trailing edge erase margin on the reverse side is this value plus the value of SP21017.</p> <p><i>The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Adjustment" for details</i></p> <p>[0.0 ~ 9.0 / 0.0 / 0.1 mm/step]</p>

2103*	LD Power Adjustment	[50 ~ 170 / 129 / 1/step]
	<p>Adjusts the LD power. DFU</p> <p>Do not change the value.</p>	

2110*	Test Mode dpi
	<p>Sets the scanning resolution (dpi). DFU</p> <p>[See below / 8 / 0~18]</p> <p>0: 400x400 dpi</p> <p>4: 300x300 dpi</p> <p>8: 600x600 dpi</p>

2201*	Development Bias Adjustment
2201 1	Printing
	<p>Adjusts the development bias during printing.</p> <p><i>This can be adjusted as a temporary measure if faint copies appear due to an aging drum.</i></p> <p>[−1500 ~ −200 / −650 / 1 V/step]</p>
2201 2	ID Sensor Pattern
	<p>Adjusts the development bias for making the ID sensor pattern.</p> <p>The actual development voltage for the ID sensor pattern is this value plus the value of SP22011.</p> <p><i>This should not be used in the field, because it affects ID sensor pattern density, which affects toner supply.</i></p> <p>[0 = N (200V) / 1 = H (240V) / 2 = L (160V) / 3 = HH (280V) / 4 = LL (120V)]</p>

2210*	Bias Off Time
2210 1	Charge Bias
	<p>Adjusts the charge voltage (−1200V) application time.</p> <p>DFU</p> <p><i>When the charge voltage and development bias are turned off at the same time, toner or carrier will be attracted to the drum. To reduce the toner or carrier attraction, the machine applies −1200V to the charge roller before the development bias is turned off. This SP adjusts the time for applying the charge.</i></p> <p>[0 ~ 150 / 80 / 1 ms /step]</p>
2210 2	Development Bias
	<p>Adjusts the development bias off time.</p> <p>DFU</p> <p>[−120 ~ 120 / 0 / 1ms/step]</p>

2211*	PCU Reverse Interval	
	<p>Adjusts the PCU reverse interval for cleaning during a job. When the machine has made this number of copies in the middle of a job, the machine reverses to clean the edge of the cleaning blade. After cleaning, the machine resumes the job. Set to a shorter interval if thin white lines appear on printouts.</p> <p>[0 ~ 999 / 100 / 1 sheet/step]</p> <p>0: Never cleans during job</p>	

2213*	Copies after Near End	
	<p>Selects the number of copies that can be made after toner near-end has been detected.</p> <p>[0 = 50 pages / 1 = 20 pages]</p> <p><i>If the user normally makes copies with a high proportion of black, reduce the interval.</i></p>	

2220*	Vt/Vsg/Vsp/Vsdp/Vts Display	
2220 1	Vsp	Displays the individual Vt, Vsg, Vsp, Vsdp, and Vts values.
2220 2	Vsg	
2220 3	Vsdp	
2220 4	Vt	
2220 5	Vts	
2220 6	Vsp/Vsg/Vsdp/Vt/Vts	Displays all the data used in process control, separated by slashes (/).

2301*	Transfer Current Adjust	
2301 1*	Normal Paper	
	<p>Adjusts the current applied to the transfer roller during copying from a paper tray when the user uses the "Normal" paper setting.</p> <p><i>If the user normally feeds thicker paper from a paper tray, use a higher setting.</i></p> <p>[0 = -2 μA / 1 = 0 μA / 2 = +2 μA / 3 = +4 μA]</p>	
2301 2*	Thick/Thin Paper	
	<p>Adjusts the current applied to the transfer roller during copying from the by-pass tray. These settings are also used if the 2nd tray is used and special paper is selected.</p> <p><i>If the user normally feeds thicker paper from the by-pass tray/2nd tray (special paper), use a higher setting. If waste toner is re-attracted from the drum (this can occur when using an OHP sheet), use a higher setting.</i></p> <p>[0 = -2 μA / 1 = 0 μA / 2 = +2 μA / 3 = +4 μA]</p>	
2301 3*	Duplex, Side2	
	<p>Adjusts the current applied to the transfer roller during copying from the duplex unit when the user uses the "Normal" paper setting.</p> <p><i>Use this SP when the image on the rear side of the paper has a problem caused by poor image transfer.</i></p> <p>[0 = -2 μA / 1 = 0 μA / 2 = +2 μA / 3 = +4 μA]</p>	
2301 4*	Cleaning	
	<p>Adjusts the current applied to the transfer roller during roller cleaning.</p> <p><i>If toner remains on the roller after cleaning (dirty background appears on the rear side of the paper), increase the current.</i></p> <p>[-10 ~ 0 / -4 / 1 μA/step]</p>	

2301 5	Input – Front DFU
2301 6	Input – Rear DFU
2301 7	Temp Inside the Machine Displays the temperature measured inside the machine just after power-on (by the thermistor on the SBCU board) the last time that the fusing unit was less than 40°C just after the machine was switched on. <i>The transfer current is corrected in accordance with this value.</i>

2801	Developer Initialization Initializes the developer and resets the TD and ID sensor outputs to their defaults. Do this SP after you fill the PCU with developer at machine installation and every time developer is replaced.
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2802	Developer Mixing Mixes the developer and checks Vt. The machine mixes the developer for 2 minutes and while doing this, it reads the TD sensor output (Vt). It does not initialize the TD sensor output. <i>If the machine has not been used for a long time, prints may have a dirty background. In this case, use this SP mode to mix the developer.</i>
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2803*	Developer Initialization Data
2803 1	Vts When the machine detects a new PCU (photoconductor unit) in the machine, it checks the heat seals at the creation of the first ID sensor pattern. After the agitator is rotated for 30 sec., the machine creates the second ID sensor pattern and corrects the reference value of the TD sensor. The corrected reference value for the TD sensor is recorded here.
2803 2	ID Sensor PWM Value Displays the PWM value of the ID sensor after performing the developer initialization. This value is added to the value of SP2934 4 (PWM Start Value for Vsg Auto Adjust).
2803 3	Flag DFU

2804	New PCU Check DFU This SP determines whether the machine is set to recognize a new PCU. [0~1/0/1] 0 : New PCU recognition on. 1 : New PCU recognition off.
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2901*	Separation Voltage Adj	
2901 1	Front – Leading Edge	Adjusts the voltage that is applied to the separation plate during printing at the leading edge of the paper on the front side. <i>If the copies have pawl marks at the leading edge, increase this voltage.</i> [–4000 ~ –1000 / –1800 / 1 V/step]
2901 2	Front – Image Area	Adjusts the voltage that is applied to the separation plate during printing on the image area of the paper on the front side. <i>If the copies have pawl marks in the image area, increase this voltage.</i> [–4000 ~ –1000 / –1800 / 1 V/step]
2901 3	Rear – Leading Edge	Adjusts the voltage applied to the separation plate, during printing at the leading edge of the paper on the rear side. <i>See SP29011.</i> [–4000 ~ –1000 / –2100 / 1 V/step]
2901 4	Rear – Image Area	Adjusts the voltage applied to the separation plate, during printing at the image area of the paper on the rear side. <i>See SP29012.</i> [–4000 ~ –1000 / –2100 / 1 V/step]

2902*	Test Pattern	
2902 3	Test Pattern Printing	Prints the test patterns. Select the number of the test pattern that you want to print 2902-2: Not used. To print the IPU Test Pattern – SP 4417 2902-3: <i>When adjusting the printing registration, select no.10 (Trimming Area Pattern).</i> [0 ~ 24 / 0 / 1 step]

2906*	Tailing Correction	
2906 1	Shift Value	Shifts the image across the page at the interval specified by SP2906 2. <i>When making many copies of an original that contains vertical lines (such as a table), separation may not work correctly, then a tailing image will occur (ghosts of the vertical lines will continue past the bottom of the table). This SP prevents this problem.</i> [0.0 ~ 1.0 / 0.0 / 0.1 mm/step]
2906 2	Interval	Changes the interval for the image shift specified by SP2906 1. [0 ~ 10 / 0 / 1 page/step]

2907*	Line Width Correction	
	Adjusts the line width for the copy mode. The default setting disables this function. A number smaller than the default makes lines thinner, a number larger than the default makes lines thicker.	
2907 1	Text Mode	[0 ~ 10 / 5 / 1 step]
2907 2	Photo Mode	[0 ~ 10 / 6 / 1 step]
2907 3	Text/Photo Mode	[0 ~ 10 / 5 / 1 step]
2907 4	Pale Mode	
2907 5	Generation Mode	

2908	Forced Toner Supply
	Forces the toner bottle to supply toner to the toner supply unit. Press Execute on the touch panel to start. <i>During this process, the machine supplies toner until the toner concentration in the development unit reaches a standard level. However, if the toner concentration does not reach a standard level, the machine supplies toner for 2 minutes maximum.</i>

2909*	Main Scan Magnification
	[-0.5 ~ 0.5 / 0.0 / 0.1%/step]
2909 1	Copy (Short Edge Feed)
	Adjusts the main scan magnification in copy mode when the machine feeds the paper in the short edge feed orientation.
2909 2	Printer (Short Edge Feed)
	Adjusts the main scan magnification in printer mode when the machine feeds the paper in the short edge feed orientation.
2909 3	Copy –(Long Edge Feed)
	Adjusts the main scan magnification in copy mode when the machine feeds the paper in the long edge feed orientation.
2909 4	Printer (Long Edge Feed)
	Adjusts the main scan magnification in printer mode when the machine feeds the paper in the long edge feed orientation.

2910*	Margin Adjustment for By-pass
	Adjusts the blank margin at the trailing edge of paper fed from the by-pass table. [-9.0 ~ +9.0 / 0 mm / 0.1 mm/step]

2913*	ID Adjustment for Test Pattern
	Adjusts the image density level for black pixels on test pattern printouts (patterns are made with SP2902) [0 ~ 15 / 15 / 1/step] <i>This SP affects all test patterns except for the grayscale test patterns.</i>

2915*	<p>Polygon Motor Idling Time</p> <p>Selects the polygon motor idling time. [0 = None / 1 = 15 s / 2 = 25 s] <i>If the user sets an original, touches a key, or opens the platen cover/DF, the polygon motor starts idling to make a faster first copy. However, with the default (15 s), the motor stops if the user does nothing for 15 s, and stops 15 s after the end of a job.</i> <i>If set at "0", the polygon motor never turns off during stand-by. However, when the machine goes into energy saver mode, the polygon motor turns off regardless of this timer.</i></p>
2921*	<p>Toner Supply Mode</p> <p>Selects the toner supply mode. [0 = Sensor 1 / 1 = Sensor 2 / 2 = Fixed 1 / 3 = Fixed 2, 4 = Sensor 3] <i>Normally, only use setting 0. Change to 3 temporarily if the TD sensor is defective. Do not use settings 1, 2 and 4; these are for designer's use only.</i></p>
2922*	<p>Toner Supply Time</p> <p>Adjusts the toner supply motor on time for sensor supply mode. This SP is effective only when SP2921 is "0" or "1". [0.1 ~ 5.0 / 0.6 / 0.1 s/step] <i>Increasing this value increases the toner supply motor on time. So, use a high value if the user tends to make lots of copies that have a high proportion of black.</i></p>
2923*	<p>Toner Recovery Time</p> <p>Adjusts the toner supply motor on time during recovery from toner near-end/end. This SP is effective only when SP2921 is "0", "1", or "2". [1 ~ 60 / 30 / 1 s/step] <i>Note that toner recovery is done in a 3-second cycle. So, the input value should be a multiple of 3 (e.g. 3, 6, 9). See "Toner Density Control" for more details.</i></p>
2925*	<p>Toner Supply Ratio</p> <p>Adjusts the toner supply rate for fixed toner supply mode. This SP is effective only when SP2921 is "2" or "3". <i>Increasing this value increases the toner supply motor on time. So, use a high value if the user tends to make lots of copies that have a high proportion of black. See "Toner Density Control" for more details.</i> [0 ~ 7 / 0 / 1/step] 0: t 4: 12t 1: 2t 5: 16t 2: 4t 6: On continuously 3: 8t 7: 0 s t: 200 ms</p>
2926*	<p>Standard Vt DFU</p> <p>Adjusts Vts (Vt for a new PCU). The TD sensor output is adjusted to this value during the TD sensor initial setting process. This SP is effective only when SP2921 is "0", "1", or "2". [0.00 ~ 5.00 / 2.50 / 0.05 V/step]</p>

2927*	ID Sensor Control	
	Selects whether the ID sensor is used or not for toner density control. [0 = No / 1 = Yes] <i>If this value is "0", dirty background may occur after the machine has not been used for a long time.</i>	
2928*	Toner End Clear	
	Clears the toner end condition. Press Execute on the touch panel to clear the toner end condition without adding new toner. When you press Execute, the following are cleared: <ul style="list-style-type: none"> • Toner end indicator (goes out) • Toner near-end counter • Toner near-end level When making a lot of copies after changing this setting to "1", the carrier may be attracted to the drum when the toner runs out, which may damage the drum.	
2929*	Vref Adjustment	
2929 1	Upper Limit	
	Adjusts the upper limit for Vref. [0.5 ~ 3.5 / 3.10 / 0.05 V/step]	
2921 2	Lower Limit	
	Adjusts the lower limit for Vref. [0.5 ~ 3.5 / 1.40 / 0.05 V/step]	
2930*	TD Sensor Manual Setting	
	Adjusts the TD sensor output. DFU [0 ~ 5 / 0.0V / 0.05V/step]	
2931*	TD (V/wt%) Setting	
	Adjusts the TD sensor sensitivity (coefficient: S) for toner density control. DFU [0.01 ~ 1.50 / 0.4 / 0.01/step]	
2932*	Toner Density Control Level	
	Adjusts the toner density control threshold level. [0 = Normal / 1 = Dark / 2 = Light / 3 = Darker / 4 = Lighter] <i>Use this SP when you want to adjust the image density.</i>	
2933*	ID Sensor Control Correction	
	Adjusts the ID sensor control coefficient. DFU [0.5 ~ 3 / 1 / 0.1/step]	
2934*	ID Sensor PWM Setting	
2934 1	Display	Displays the PWM of the ID Sensor LED.
2934 2	Upper Limit	
	Adjusts the upper limit of the PWM for the ID sensor LED. DFU [0 ~ 1279 / 0 / 1/step]	
2934 3	Upper Limit Correction	
	Corrects the upper limit of the PWM for the ID sensor LED. DFU [0 ~ 255 / 50 / 1/step]	

2935	ID Sensor Initialization	
	Performs the ID sensor initial setting. <i>Press Execute on the touch panel to start. Perform this setting after replacing or cleaning the ID sensor.</i>	

2936*	ID Sensor Pattern Size	
	Selects the ID sensor pattern size in the main scan direction. <i>Set to 1 if white spots or black spots appear on prints. The ID sensor pattern is 290 mm wide, and when this is cleaned off, dirt is removed also.</i> [0 = 20 mm / 1 = 290 mm]	

2989	Original PCU ID South Korea only	
	Displays the ISSUER CODE of the loaded PCU. The history of the PCU ID codes is stored in NVRAM for display.	
2989 1	Latest	Most current code (in use).
2989 2	Last 1	Up to four issuer codes of toner lots in the same series can be stored. If a PCU with a new series code is set, then the new code replaces the history of the previous PCU.
2989 3	Last 2	
2989 4	Last 3	
2989 5	Last 4	

2990	Original Toner ID South Korea only	
	Displays the ISSUER CODE of the loaded toner. The history of the toner ID codes are stored in NVRAM for display.	
2990 1	Latest	Most current code (in use).
2990 2	Last 1	Up to four issuer codes of toner lots in the same series can be stored. If toner with a new series code is set, then the new code replaces the history of the previous toner.
2990 3	Last 2	
2990 4	Last 3	
2990 5	Last 4	

2991	Original Toner Counter South Korea only	
	Displays the page counts for the ISSUER CODE history. [0~65535 / 0 / 1]	
2991 1	Latest	This SP displays the page counts for each successive issuer code. See SP2990 above.
2991 2	Last 1	
2991 3	Last 2	
2991 4	Last 3	
2991 5	Last 4	

2992*	Copies After TD Sensor Error	
	Selects the number of copies that can be made after a TD sensor error has been detected. When the machine copies this amount, an SC condition will occur. If the optional fax unit is installed, the SC condition occurs immediately regardless of the number of prints (this is because the sender of the fax cannot check the image quality of the printout). [0 = 100 copies / 1 = 200 copies]	

2993*	ISSUER CODE Ref	
	Sets the standard issuer code, once it has been determined. South Korea Only. [0~9999 / 0 / 1]	

2994*	Vts Limitation - Factory	
2994 1	Upper Limit - Factory Only	DFU
2994 2	Lower Limit - Factory Only	DFU






2995*	ID Sensor Detection Interval	
2995 1	Warming-up	
	This SP controls the temperature at which the ID sensor pattern is created after the machine is turned on, or after the machine returns to full operation from the energy saver or auto off mode. [0 ~ 255 / 30 / 1 degree]	
2995 2	Number of Pages	
	The machine makes an ID sensor pattern after the specified number of prints has been made. [0 ~ 999 / 300 / 1 page/step]	

2996	Transfer Roller Cleaning	
	These SP codes determine how the transfer roller is cleaned.	
2996 1	0:OFF 1:ON	
	Selects whether the transfer roller is cleaned. Transfer roller cleaning is necessary only when black spots occur in the image areas of copies. This can occur when bad environmental conditions increase the toner density. <i>Set this to '1' when dirty background appears on the reverse side of the first page of a copy job. However, the first copy time will be longer regardless of the SP2996 001 setting.</i> [0 = No / 1 = Yes]	
2996 2	Interval	
	This SP sets the page interval for transfer roller cleaning when SP2996 001 is set to "1" (Yes). Increase this setting only when absolutely necessary. A higher setting increases wear on the PCU. [0~100/ 50 /1 sheets] Note <ul style="list-style-type: none"> This SP does not execute for the first copy after power on or when the machine returns from the energy save or auto off mode. This SP setting does cannot correct poor copies if there is a problem with the TD sensor. 	


2997*	Standard Vt (Factory Only)	DFU
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2998*	PCU Reverse Rotation Time DFU
2998 1	Wait Time Adjusts the waiting time for starting to rotate the drum in reverse after the end of each job. The wait time calculation formula is as follows. [0 ~ 999 / 600 / 1] This SP is adjusted in units of 30 ms (1 step = 30 ms, 2 steps = 60 ms, etc.) If "0" is selected, the drum reverses immediately at the end of the job.
2998 2	Reverse Time Adjusts the drum reverse rotation time. [0 ~ 99 / 60 / 1] This SP is adjusted in units of 60 ms (1 step = 6 ms, 2 steps = 12 ms, etc.) If "0" is selected, the drum does not reverse at the end of the job.
2998 3	Brake Time Adjusts the length of time of braking to stop reverse rotation of the drum. [0~99/ 60 /1] This SP is adjusted in units of 6 ms (1 step = 6 ms, 2 steps = 12 ms, etc.) If "0" is selected, the drum stops reverse rotation immediately. Note: Adjust the SP only if the PCU makes noise during braking when the drum rotation slows. To reduce or eliminate the noise, select a lower setting to reduce the braking time.
2999*	Toner Control Data Display DFU
	Displays the toner density control data on the debug monitor. [0 = No / 1 = Yes]

SP4-XXX: Scanner

4008*	Scanner Sub Scan Mag	
	Adjusts the magnification in the sub scan direction. [−0.9 ~ +0.9 / 0.0 / 0.1% step] Use the  key to toggle between + and – before entering the value. The specification is ± 1%. See “Replacement and Adjustment - Copy Adjustment” for details.	
4009*	Scanner Main Scan Mag	
	Adjusts the magnification in the main scan direction for scanning. [−0.9 ~ +0.9 / 0.0 / 0.1% step] Use the  key to toggle between + and – before entering the value. The specification is ± 1%. See “Replacement and Adjustment – Copy Adjustment” for details.	
4010*	Scanner Leading Edge Registration	
	Adjusts the leading edge registration for scanning in platen mode. [−0.9 ~ +0.9 / 0.0 / 0.1 mm step] (−): The image moves in the direction of the leading edge. Use the  key to toggle between + and – before entering the value. The specification is 2 ± 1.5 mm. See “Replacement and Adjustment – Copy Adjustment” for details.	
4011*	Scanner Side-to-side Registration	
	Adjusts the side-to-side registration for scanning in platen mode. [−4.6 ~ +4.6 / 0.0 / 0.1 mm step] (−): The image disappears at the left side. (+): The image appears. Use the  key to toggle between + and – before entering the value. The specification is 2 ± 1.5 mm. See “Replacement and Adjustment – Copy Adjustment” for details.	
4012*	Scanner Erase Margin	
4012 1	Leading Edge	Adjusts the erase margin at each side for scanning. Do not adjust this unless the user wishes to have a scanner margin that is greater than the printer margin. [0 ~ 9.0 / 0.5 / 0.1 mm/step]
4012 2	Trailing Edge	
4012 3	Right Side	
4012 4	Left Side	
4013	Scanner Free Run	
	Performs a scanner free run with the exposure lamp on. Press ON on the touch panel to start this feature. Press the  (Clear/Stop) key to stop.	

4015*	White Plate Scanning
4015 1	Start Position Adjusts the scanning start position on the white plate for auto shading. <i>The default is 10.5 mm from the leading edge. The setting specifies how far scanning starts from the default position.</i> [−5.0 ~ +5.0 / 0.0 / 0.1 mm/step]
4015 2	Scanning Area Adjusts the width of the area on the white plate (in the sub scan direction) that is scanned for auto shading. <i>The default is 4.76 mm. The current setting specifies the difference from this default.</i> [−5.0 ~ +5.0 / 0.0 / 0.1 mm/step]
4301	APS Data Display Displays the status of the APS sensors and platen/DF cover sensor (➡ 4.2.9).
4303*	APS Small Size Original Selects if the copier defaults to A5 SEF/LEF if the APS sensor cannot detect the size of a small original. [0~2/ 0 /1] 0: Not detected as A5 1: Detected as A5 SEF 2: Detected as A5 LEF
4305*	Original Size Detection Selects whether the machine determines that the original is A4/LT, or 8K/16K. 8K/16K is not available for USA models. [0 = Normal (LT for USA models, A4 for Europe/Asia models) 1 = Reversed [A4 for USA models, LT for Europe/Asia models] 2 = 8K/16K]

4417	<p>IPU Test Pattern</p> <p>Prints test patterns from the IPU video data outputs.</p> <p>0.No Print</p> <ol style="list-style-type: none"> 1.Vertical Line – 1 dot 2.Vertical Line – 2 dot 3.Horizontal Line – 1 dot 4.Horizontal Line – 2 dot 5.Alternating Dot Pattern 6.Grid Pattern – 1 dot 7.Vertical Bands 8.Grayscale – Horizontal (8 level) 9. Grayscale – Vertical (8 level) 10.Grayscale – 16 level 11.Cross Pattern 12.Slant Pattern 13.Patch Pattern (256 level) 14Patch Pattern (64 level) 15.Trimming Area 16.Frequency characteristics – Vertical 15.Frequency characteristics – Horizontal <p><i>Change to the copy mode display by pressing the  (Interrupt) key, then print the test pattern.</i></p>
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4428	<p>SBU Auto Adjustment</p> <p>Performs the auto scanner adjustment.</p> <p><i>Using this SP mode after replacing the white plate or erasing the memory on the controller board. See “Replacement and Adjustment – Copy Image Adjustments - Standard White Density Adjustment” for details on how to do this.</i></p> <p><i>Press Execute on the touch panel to start.</i></p>
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4550*	Scanner Appli: Text: Print	
4550 1	MTF Filter Level: Main Scan	Set the MTF coefficient for main/sub scan directions. [0~15/ 8 /1] 0: Weakest ← 8: Default → 15: Strongest
4550 2	MTF Filter Level: Sub Scan	
4550 3	MTF Filter Strength: Main Scan	Set the MTF strength for main/sub scan directions. [0~7/ 4 /1] 0: Weakest ← 4: Default → 7: Strongest
4550 4	MTF Filter Strength: Sub Scan	
4550 5	Smoothing	Selects the level of smoothing for originals that contain dithered images. [0~7/ 0 /1] 0: Default (Off) → 7: Strongest
4550 6	Brightness (Not Used)	Sets the overall brightness of the image. [1~255/ 128 /1] 1: Weakest ← 128: Default → 255: Strongest
4550 7	Contrast (Not Used)	Sets the overall contrast of the image. [1~255/ 128 /1] 1: Weakest ← 128: Default → 255: Strongest
4550 8	Isolated Dot Erase	Sets the level of independent dot erasure to improve the appearance of background. [0~7/ 0 /1] 0: Default (Off) → 7: Strongest

4551*	Scanner Appli: Text: OCR	
4551 1	MTF Filter Level: Main Scan	Set the MTF coefficient for main/sub scan directions. [0~15/ 8 /1] 0: Weakest ← 8: Default → 15: Strongest
4551 2	MTF Filter Level: Sub Scan	
4551 3	MTF Filter Strength: Main Scan	Set the MTF strength for main/sub scan directions. [0~7/ 4 /1] 0: Weakest ← 4: Default → 7: Strongest
4551 4	MTF Filter Strength: Sub Scan	
4551 5	Smoothing	Selects the level of smoothing. [0~7/ 0 /1] 0: Default (Off) → 7: Strongest
4551 6	Brightness (Not Used)	Sets the overall brightness of the image. [1~255/ 128 /1] 1: Weakest ← 128: Default → 255: Strongest
4551 7	Contrast (Not Used)	Sets the overall contrast of the image. [1~255/ 128 /1] 1: Weakest ← 128: Default → 255: Strongest
4551 8	Isolated Dot Erase	Sets the level of independent dot erasure to improve the appearance of background. [0~7/ 0 /1] 0: Default (Off) → 7: Strongest

4552*	Scanner Appli: Text/Photo	
4552 1	MTF Filter Level: Main Scan	Set the MTF coefficient for main/sub scan directions. [0~15/ 8 /1] 0: Weakest ← 8: Default → 15: Strongest
4552 2	MTF Filter Level: Sub Scan	
4552 3	MTF Filter Strength: Main Scan	Set the MTF strength for main/sub scan directions. [0~7/ 4 /1] 0: Weakest ← 4: Default → 7: Strongest
4552 4	MTF Filter Strength: Sub Scan	
4552 5	Smoothing	Selects the level of smoothing. [0~7/ 0 /1] 0: Default (Off) → 7: Strongest
4552 6	Brightness (Not Used)	Sets the overall brightness of the image. [1~255/ 128 /1] 1: Weakest ← 128: Default → 255: Strongest
4552 7	Contrast (Not Used)	Sets the overall contrast of the image. [1~255/ 128 /1] 1: Weakest ← 128: Default → 255: Strongest
4552 8	Isolated Dot Erase	Sets the level of independent dot erasure to improve the appearance of background. [0~7/ 0 /1] 0: Default (Off) → 7: Strongest

4553*	Scanner Appli: Photo	
4553 1	MTF Filter Level: Main Scan	Set the MTF coefficient for main/sub scan directions. [0~15/ 8 /1] 0: Weakest ← 8: Default → 15: Strongest
4553 2	MTF Filter Level: Sub Scan	
4553 3	MTF Filter Strength: Main Scan	Set the MTF strength for main/sub scan directions. [0~7/ 4 /1] 0: Weakest ← 4: Default → 7: Strongest
4553 4	MTF Filter Strength: Sub Scan	
4553 5	Smoothing	Selects the level of smoothing. [0~7/ 0 /1] 0: Default (Off) → 7: Strongest
4553 6	Brightness (Not Used)	Sets the overall brightness of the image. [1~255/ 128 /1] 1: Weakest ← 128: Default → 255: Strongest
4553 7	Contrast (Not Used)	Sets the overall contrast of the image. [1~255/ 128 /1] 1: Weakest ← 128: Default → 255: Strongest
4553 8	Isolated Dot Erase	Sets the level of independent dot erasure to improve the appearance of background. [0~7/ 0 /1] 0: Default (Off) → 7: Strongest

4556*	Scanner Appli Grey Scale	
4556 1	MTF Filter Level: Main Scan	Set the MTF coefficient for main/sub scan directions. [0~15/ 0 /1] 0: Weakest ← 8: Default → 15: Strongest
4556 2	MTF Filter Level: Sub Scan	
4556 3	MTF Filter Strength: Main Scan	Set the MTF strength for main/sub scan directions. [0~7/ 0 /1] 0: Default (Off) → 7: Strongest
4556 4	MTF Filter Strength: Sub Scan	
4556 5	Smoothing	Selects the level of smoothing. [0~7/ 0 /1] 0: Default (Off) → 7: Strongest
4556 6	Brightness (Not Used)	Sets the overall brightness of the image. [1~255/ 128 /1] 1: Weakest ← 128: Default → 255: Strongest
4556 7	Contrast (Not Used)	Sets the overall contrast of the image. [1~255/ 128 /1] 1: Weakest ← 128: Default → 255: Strongest
4556 8	Isolated Dot Erase	Sets the level of independent dot erasure to improve the appearance of background. [0~7/ 0 /1] 0: Default (Off) → 7: Strongest

4623*	Black Level Adj. 1 DFU	
	Displays the DAC value of black offset correction.	
4623 1	Rough: Even	[0~255/ 128 /1]
4623 2	Rough: Odd	
4623 3	Fine: Even	
4623 4	Fine: Odd	

4624*	Black Level Adj. 2 DFU	
	Displays the DAC value of black offset correction.	
4624 1	Rough: Even	[0~255/ 128 /1]
4624 2	Rough: Odd	
4624 3	Fine: Even	
4624 4	Fine: Odd	

4646*	SBU Adjustment Error	
	Use this SP to determine whether the automatic scanner adjustment loop has exceeded the prescribed number of loops and flagged a timeout. The position of the bits that display "1" tell you where the error has occurred.	
	Bit No.	Where the Error Occurred
	Bit 0	White Level
	Bit 1	Black Level Adj 1
	Bit 2	Black Level Adj 2
	Bit 3	Black Level
	Bit 4	SBU
	Bit 7	Reference Adjustment

4800	Black Level Adjustment Mode DFU	
	This SP switches the black offset compensation mode on and off. Black offset correction is done during automatic image density correction (ADS). Note: This SP operates only if the black offset correction circuit is built into the SBU. 0: Off 1: On	

4901	SBU Adjustment
4901 1	Gain – Even DFU Checks the difference value of the black level for the EVEN channel after adjusting the black level at power-up. However, after doing a memory all clear (SP5801), use it to re-input the previous value. [0 ~ 255 / 40 / 1/step]
4901 2	Gain – Odd DFU Checks the difference value of the black level for the ODD channel after adjusting the black level at power-up.. However, after doing a memory all clear (SP5801), use it to re-input the previous value. [0 ~ 255 / 40 / 1/step]
4901 3	Black Level – Even DFU Displays the coefficient of the D/A converter for the DC cont AGC gain curve for the EVEN channel.
4901 4	Black Level - Odd DFU Displays the coefficient of the D/A converter for the DC cont AGC gain curve for the ODD channel.
4901 5	White Level: EVEN DFU Displays the result of white level adjustment for the EVEN channel after automatic density level adjustment is done after the machine is switched on.
4901 6	White Level: ODD DFU Displays the result of white level adjustment for the ODD channel after automatic density level adjustment is done after the machine is switched on.
4901 7	Ref. Cont DFU Displays and allows adjustment of the coefficient of the D/A converter for the AGC gain curve for scanning the white plate. After doing a memory all clear (SP5801), use it to re-input the previous value. [0 ~255 / 147 / 1/step]
4902	Exposure Lamp ON Turns on the exposure lamp. <i>Press ON on the touch panel to turn on the lamp. Press OFF to turn off the lamp.</i>

4903*	Image Quality Adjustment - All	Note: These adjustments are effective only for the “Custom Setting” Original type.
4903 1	Text: 25% ~ 34%	Adjusts the image quality in Text mode. <i>A larger number increases contrast and sharpens the image but moiré may appear. A smaller number reduces contrast and moiré but the line may become narrower.</i> [0 ~ 10 / 0 / 1 step]
4903 2	Text: 35% ~ 66%	
4903 3	Text: 67% ~ 141%	
4903 4	Text: 142% ~ 400%	
4903 5	Photo: 25% ~ 34%	Adjusts the image quality in Photo mode. <i>0 ~ 6 are for a glossy photo image (error diffusion) 7 ~ 20 are for a printed photo image (dithering) If copy quality is not satisfactory, try another setting (trial and error)</i> [0 ~ 20 / 12 / 1/step]
4903 6	Photo: 35% ~ 66%	
4903 7	Photo: 67% ~ 141%	
4903 8	Photo: 142% ~ 400%	
4903 9	Text/Photo: 25% ~ 34%	Adjusts the image quality in Text/Photo mode. <i>A larger number increases contrast and sharpens the image but moiré may appear. A smaller number reduces contrast and moiré but the line may become narrower.</i> [0 ~ 10 / 5 / 1 step]
4903 10	Text/Photo: 35% ~ 66%	[0 ~ 10 / 5 / 1 step]
4903 11	Text/Photo: 67% ~ 141%	
4903 12	Text/Photo: 142% ~ 400%	
4903 13	Pale: 25% ~ 34%	Adjusts the image quality in Pale mode. <i>A larger number increase the number of gradations in low contrast areas.</i> [0 ~ 10 / 5 / 1 step]
4903 14	Pale: 35% ~ 66%	
4903 15	Pale: 67% ~ 141%	
4903 16	Pale: 142% ~ 400%	
4903 17	Generation: 25% ~ 34%	Adjusts the image quality in Generation mode. <i>A larger number increases contrast and sharpens the image but moiré may appear. A smaller number reduces contrast and moiré but the line may become narrower.</i> [0 ~ 10 / 5 / 1 step]
4903 18	Generation: 35% ~ 66%	[0 ~ 10 / 5 / 1 step]
4903 19	Generation: 67% ~ 141%	
4903 20	Generation: 142% ~ 400%	

4904*	Image Quality Adj. - Other	
	Independent Dot Erase	
4904 1	Text	This adjustment is only effective for the "Custom Setting" original type. <i>With a larger SP setting, more dots are detected as independent dots and erased. However, dots in mesh-like images may be detected as independent dots mistakenly. If "0" is selected, independent dot erase is disabled.</i> [0 ~ 10 / 0 / 1 step]
4904 2	Photo	
4904 3	Text/Photo	
4904 4	Pale	
4904 5	Generation	[0 ~ 10 / 3 / 1 step]
	Background Erase	
4904 6	Text	This adjustment is only effective for the "Custom Setting" original type. <i>A larger number reduces dirty background. If "0" is selected, background erase is disabled.</i> [0 ~ 255 / 0 / 1 step]
4904 7	Photo	
4904 8	Text/Photo	
4904 9	Pale	
4904 10	Generation	[0 ~ 255 / 5 / 1 step]
	Gamma	
4904 11	Text	This adjustment is only effective for the "Custom Setting" original type. Selects the gamma table for each original type. [0 ~ 2 / 5 / 1/step] <i>0: Standard gamma table 1: This gamma table reduces the background of the original and gives sharp characters. 2: The gamma table increases the number of gradations in high-density areas.</i>
4904 12	Photo	
4904 13	Text/Photo	
4904 14	Pale	
4904 15	Generation	

4905*	Image Data Path
	Selects one of the following video data outputs which will be used for printing. DFU [0 ~ 3 / 0 / 1 step] 0: Normal 1: After black level correction 2: After shading correction without black level correction 3: Shading data

4907*	Gash Adj: Others
4907 1*	Fax 25%, 50% Reduction
	Determines whether 25% and 50% reduction is available in fax mode. [0 = No, 1 = Yes]
4907 2	Outline Level DFU

4909*	IPU Image Data Path	
	Selects one of the following image data outputs, which will be used for printing. DFU [0 ~ 255 / 0 / 1 step] Bit 7: Shading Bit 6: Scanner gamma Bit 5: Pre-filtering Bit 4: Magnification Bit 3: Scanner/Printer Mask Bit 2: Gradation Bit 1: Filtering Bit 0: Printer gamma	

4920	Scanning (Factory Only) DFU	
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4930*	Sensor Condition	
4930 1	Platen Cover sensor	Checks the following sensors in the scanner unit. [0 = Opened, 1 = Closed]
4930 2	Scanner HP Sensor	[0 = Opened, 1 = Closed]

4999	ADF Scan Glass Dust Check	
	This function checks the narrow scanning glass of the ADF for dust that can cause black lines in copies. If dust is detected a system banner message is displayed, but processing does not stop.	
4999 1	Check On/Off Change Issues a warning if there is dust on the narrow scanning glass of the ADF when the original size is detected before a job starts. This function can detect dust on the white plate above the scanning glass, as well as dust on the glass. Sensitivity of the level of detection is adjusted with SP4999 2. [0 ~ 1 / 0 / 1] 0:Off. No dust warning. 1:On. Dust warning. This warning does not stop the job. Note: Before switching this setting on, clean the ADF scanning glass and the white plate above the scanning glass.	
4999 2	Detect Level Adjusts the sensitivity for dust detection on the ADF scanning glass. This SP is available only after SP49991 is switched on. [0~8 / 4/ 1] If you see black streaks in copies when no warning has been issued, raise the setting to increase the level of sensitivity. If warnings are issued when you see not black streaks in copies, lower the setting. Note: Dust that triggers a warning could be removed from the glass by the originals in the feed path. If the dust is removed by passing originals, this is not detected and the warning remains on.	

SP5XXX: Mode

5024*	mm/inch Selection
	Selects whether mm or inches are used in the display. Note: After selecting the number, you must turn the main power switch off and on. Europe/Asia model: [0 = mm / 1 = inch] American model: [0 = mm / 1 = inch]

5044	Operation Panel Bit SW
5044 1	SW1 DFU
5044 2	SW2 DFU

5045	Accounting Counter
	Selects whether the printer counter is displayed on the LCD. [0~1/0/1] 0: Displays total counter only. 1: Displays both total counter and printer counter.

5051	Toner Refill Detection Display
	Switches the toner refill prompt display off on. Default: On



5052	Recover Time Priority Setting
	The recovery time of the Basic model is 5 sec. so two settings provided, one for energy save priority and one for start time priority. 0: Energy save priority 1: Start time priority



5104*	A3/DLT Double Count
	Specifies whether the counter is doubled for A3/DLT. "Yes" counts except from the bypass tray. When "Yes" is selected, A3 and DLT paper are counted twice, that is A4 x2 and LT x2 respectively.

5106*	Density Level Setting
	<p>Selects the image density level used in ADS mode.</p> <p>[1~7 / 4 / 1 notch per step]</p> <p>Example: If you set SP5106 6 to "2": Pressing the Auto Image Density key toggles the display off and manual notch 2 is selected.</p> <p><i>Adjust this SP if the customer cannot attain clean copies after performing automatic density adjustment</i></p>

5113	Optional Counter Type
51131	<p>Default Optional Counter Type</p> <p>Selects the type of counter:</p> <p>0: None</p> <p>1: Key Card (RK3, 4) Japan only</p> <p>2: Key Card Down</p> <p>3: Pre-paid Card</p> <p>4: Coin Rack</p> <p>5: MF Key Card</p> <p>11: Exp Key Card (Add)</p> <p>12: Exp Key Card (Deduct)</p>
5113 2	<p>External Optional Counter Type</p> <p>Enables the SDK application. This lets you select a number for the external device for user access control.</p> <p>Note: "SDK" refers to software on an SD card.</p> <p>[0~3/1]</p> <p>0: None</p> <p>1: Expansion Device 1</p> <p>2: Expansion Device 2</p> <p>3: Expansion Device 3</p>

5118	Disable Copying
	<p>Temporarily denies access to the machine. Japan Only</p> <p>[0~1/1]</p> <p>0: Release for normal operation</p> <p>1: Prohibit access to machine</p>

5120	Mode Clear Opt. Counter Removal Do not change. Japan Only [0~2/1] 0: Yes. Normal reset 1: Standby. Resets before job start/after completion 2: No. Normally no reset
5121	Counter Up Timing Determines whether the optional key counter counts up at paper feed-in or at paper exit. Japan Only [0~1/1] 0: Feed count 1: No feed count
5127	APS Mode This SP can be used to switch APS (Auto Paper Select) off when a coin lock or pre-paid key card device is connected to the machine. [0~1/1] 0: On 1: Off
5129*	F Paper Size Selection Selects the "F" paper size. [0 ~ 2 / 0 / 1 step] 0: 8" x 13" 1: 8.5" x 13" 2: 8.25" x 13"
5131*	Paper Size Type Selection Selects the paper size (type) for both originals and copy paper. [0~2 / DIP SW setting / 1 step] 0:Japan 1:North America 2:Europe <i>After changing the setting, turn the copier off and on. If the paper size of the archive files stored on the HDD is different, abnormal copies could result. Ask the customer to restore the archive files.</i>
5150	Bypass Length Setting Sets up the by-pass tray for long paper. [0~1/1] 0: Off 1: On. Sets the tray for feeding paper up to 600 mm long. <i>With this SP selected on, paper jams are not detected in the paper path.</i>

5162	App. Switch Method	
	Controls if the application screen is changed with a hardware switch or a software switch. [0~1/1] 0: Soft Key Set 1: Hard Key Set	

5167	Fax Printing Mode at Optional Counter Off	
	Enables or disables the automatic print out without an accounting device. This SP is used when the receiving fax is accounted for by an external accounting device. 0 : Automatic printing 1: No automatic printing	

5169	CE Login	
	If you will change the printer bit switches, you must 'log in' to service mode with this SP before you go into the printer SP mode. [0~1/1] 0: Off. Printer bit switches cannot be adjusted. 1: On. Printer bit switches can be adjusted.	


5179*	Bypass Size Error	
	This SP determines whether a paper size error prompt appears when the machine detects the wrong paper size for the job and jams during feed from the bypass tray. [0~1/ 0 /1] 0: Off 1: On	

5212	Page Numbering	
5212 3	Duplex Printout Left/Right Position	Horizontally positions the page numbers printed on both sides during duplexing. [-10~+10/1 mm] 0 is center, minus is left, + is right.
5212 4	Duplex Printout High/Low Position	Vertically positions the page numbers printed on both sides during duplexing. [-10~+10/1 mm] 0 is center, minus is down, + is up.

5302	Set Time DFU
	<p>Sets the time clock for the local time. This setting is done at the factory before delivery. The setting is GMT expressed in minutes. [-1440~1440/1 min.] JA: +540 (Tokyo) NA: -300 (NY) EU: +6- (Paris) CH: +480 (Peking) TW: +480 (Taipei) AS: +480 (Hong Kong)</p>



5307	Summer Time	
	<p>Lets you set the machine to adjust its date and time automatically with the change to Daylight Savings time in the spring and back to normal time in the fall. This SP lets you set these items:</p> <ul style="list-style-type: none"> • Day and time to go forward automatically in April. • Day and time to go back automatically in October. • Set the length of time to go forward and back automatically. <p>The settings for 002 and 003 are done with 8-digit numbers:</p>	
	Digits	Meaning
	1st, 2nd	Month. 4: April, 10: October (for months 1 to 9, the first digit of 0 cannot be input, so the eight-digit setting for 002 or 003 becomes a seven-digit setting)
	3rd	Day of the week. 0: Sunday, 1: Monday
	4th	The number of the week for the day selected at the 3rd digit. If "0" is selected for "Sunday", for example, and the selected Sunday is the start of the 2nd week, then input a "2" for this digit.
	5th, 6th	The time when the change occurs (24-hour as hex code). Example: 00:00 (Midnight) = 00, 01:00 (1 a.m.) = 01, and so on.
	7th	The number of hours to change the time. 1 hour: 1
	8th	If the time change is not a whole number (1.5 hours for example), digit 8 should be 3 (30 minutes).
5307 1	Setting	<p>Enables/disables the settings for 002 and 003. [0~1/1] 0: Disable 1: Enable</p>
5307 2	Rule Set (Start)	The start of summer time.
5307 4	Rule Set (End)	The end of summer time.



5401	Access Control DFU	
	This SP stores the settings that limit uses access to SDK application data.	
5401 6	User Recognition – Copier	This SP codes are provided for future customization of the access control feature. This is to be done at the factory, not in the field. DFU
5401 16	User Recognition – Document Server	
5401 26	User Recognition – Fax	
5401 36	User Recognition – Scanner	
5401 46	User Recognition – Printer	
5401 76	User Recognition – Expanded Function 1	
5401 86	User Recognition – Expanded Function 2	
5401 96	User Recognition – Expanded Function 2	"SDK" is the "Software Development Kit". This data can be converted from SAS (VAS) when installed or uninstalled. DFU
5401 200	SDK1 Unique ID	
5401 201	SDK1 Certification Method	
5401 210	SDK2 Unique ID	
5401 211	SDK2 Certification Method	
5401 220	SDK3 Unique ID	
5401 221	SDK3 Certification Method	

5404	User Code Count Clear
	Clears the counts for the user codes assigned by the key operator to restrict the use of the machine. Press [Execute] to clear.

5501*	PM Alarm
5501 1	PM Alarm Interval
	Sets the PM interval. <i>The value stored in this SP is used when the value of SP55012 is "1".</i> [0 ~ 255 / 0 / 1 k copies/step]
5501 2	Original Count Alarm DFU
	Selects whether the PM alarm for the number of scans is enabled or not. <i>If this is "1", the PM alarm function is enabled.</i> [0 = No / 1 = Yes]



5504*	Jam Alarm Japan Only
	Sets the alarm to sound for the specified jam level (document misfeeds are not included). RSS use only [0~3 / 3 / 1 step] 0:Zero (Off) 1:Low (2.5K jams) 2:Medium (3K jams) 3:High (6K jams)


5505*	Error Alarm
	Sets the error alarm level. Japan only DFU [0~255 / 50 / 100 copies per step]

5507	Supply Alarm	
5507 1	Paper Supply Alarm (0:Off 1:On)	Switches the control call on/off for the paper supply. DFU 0: Off , 1: On 0: No alarm. 1: Sets the alarm to sound for the specified number transfer sheets for each paper size (A3, A4, B4, B5, DLT, LG, LT, HLT)
5507 2	Staple Supply Alarm (0:Off 1:On)	Switches the control call on/off for the stapler installed in the finisher. DFU 0: Off , 1: On 0: No alarm 1: Alarm goes off for every 1K of staples used.
5507 3	Toner Supply Alarm (0:Off 1:On)	Switches the control call on/off for the toner end. DFU 0: Off , 1: On If you select "1" the alarm will sound when the copier detects toner end.
5507 128*	interval: Others	The "Paper Supply Call Level: nn" SPs specify the paper control call interval for the referenced paper sizes. DFU [00250 ~ 10000 / 1000 / 1 Step]
5507 132*	Interval: A3	
5507 133*	Interval: A4	
5507 134*	Interval: A5	
5507 141*	Interval: B4	
5507 142*	Interval: B5	
5507 160*	Interval: DLT	
5507 164*	Interval: LG	
5507 166*	Interval: LT	
5507 172*	Interval: HLT	

5508	CC Call Japan Only	
001	Jam Remains	Enables/disables initiating a call. [0~1/1] 0: Disable 1: Enable
002	Continuous Jams	
003	Continuous Door Open	
004	Low Call Mode	Enables/disables the new call specifications designed to reduce the number of calls. [0~1/1] 0: Normal mode 1: Reduced mode
011	Jam Detection: Time Length	Sets the length of time to determine the length of an unattended paper jam. [03~30/1] This setting is enabled only when SP5508-004 is enabled (set to 1).
012	Jam Detection Continuous Count	Sets the number of continuous paper jams required to initiate a call. [02~10/1] This setting is enabled only when SP5508-004 is enabled (set to 1).
013	Door Open: Time Length	Sets the length of time the remains opens to determine when to initiate a call. [03~30/1] This setting is enabled only when SP5508-004 is enabled (set to 1).
021	Jam Operation: Time Length	Determines what happens when a paper jam is left unattended. [0~1/1] 0: Automatic Call 1: Audible Warning at Machine
022	Jam Operation: Continuous Count	Determines what happens when continuous paper jams occur. [0~1/1] 0: Automatic Call 1: Audible Warning at Machine
023	Door Operation: Time Length	Determines what happens when the front door remains open. [0~1/1] 0: Automatic Call 1: Audible Warning at Machine

5801	Memory Clear	
	Resets NVRAM data to the default settings. Before executing any of these SP codes, print an SMC Report.	
5801 1	All Clear	Initializes items 2 ~ 15 below.
5801 2	Engine Clear	Initializes all registration settings for the engine and copy process settings.
5801 3	SCS	Initializes default system settings, SCS (System Control Service) settings, operation display coordinates, and ROM update information.
5801 4	IMH Memory Clear	Initializes the image file system. (IMH: Image Memory Handler)
5801 5	MCS	Initializes the automatic delete time setting for stored documents. (MCS: Memory Control Service)
5801 6	Copier application	Initializes all copier application settings.
5801 7	Fax application	Initializes the fax reset time, job login ID, all TX/RX settings, local storage file numbers, and off-hook timer.
5801 8	Printer application	Initializes the printer defaults, programs registered, the printer SP bit switches, and the printer CSS counter.
5801 9	Scanner application	Initializes the defaults for the scanner and all the scanner SP modes.
5801 10	Web Service/Network application	Deletes the Netfile (NFA) management files and thumbnails, and initializes the Job login ID. Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software
5801 11	NCS	Initializes the system defaults and interface settings (IP addresses also), the SmartNetMonitor for Admin settings, WebStatusMonitor settings, and the TELNET settings. (NCS: Network Control Service)
5801 12	R-FAX	Initializes the job login ID, SmartNetMonitor for Admin, job history, and local storage file numbers.
5801 14	Clear DCS Setting	Initializes the DCS (Delivery Control Service) settings.
5801 15	Clear UCS Setting	Initializes the UCS (User Information Control Service) settings.
5801 16	MIRS Setting	Initializes the MIRS (Machine Information Report Service) settings.
5801 17	CCS	Initializes the CCS (Certification and Charge-control Service) settings.
5801 18	SRM Clear	Initializes the SRM (System Resource Manager) settings.
5801 19	LCS Clear	Initializes the LCS (Log Count Service) settings.

5802	Printer Free Run	
	Performs a free run for both the scanner and the printer. After selecting “1”, press “OK” or the  key twice to start this feature. Press the  (Clear/Stop) key to stop. [0 = No / 1 = Yes]	

5803	Input Check	
	Displays signals received from sensors and switches. Press the  (Clear Modes) key to exit the program. (➡5.1.5)	

5804	Output Check	
	Turns on electrical components individually for test purposes. (➡5.1.6)	

5807*	Option Connection Check	
5807 1	ARDF	Checks the connectors to the optional peripheral devices. Execution will return either a “1” or “0” on the display. 1:Device connected correctly. 0:Device not connected correctly.
5807 2	Paper Tray Unit	
5807 3	LCT	
5807 4	Finisher	

5810	SC Code Reset DFU	
	Resets all level A service call conditions, such as fusing errors. To clear the service call, touch “Execute” on the LCD, then turn the main power switch off/on.	

5811	Machine No. Setting	
	This SP presents the screen used to enter the 11-digit number of the machine. The allowed entries are "A" to "Z" and "0" to "9". The setting is done at the factory, and should not be changed in the field. DFU	

5812	Service Tel. No. Setting	
001	Service	Inputs the telephone number of the CE (displayed when a service call condition occurs.)
002	Facsimile	Use this to input the fax number of the CE printed on the Counter Report (UP mode). Not Used
003	Supply	Displayed on the initial SP screen.
004	Operation	Allows the service center contact telephone number to be displayed on the initial screen.

5816	Remote Service
5816 1	I/F Setting
	Turns the remote diagnostics off and on. [0~2/1] 0: Remote diagnostics off. 1: Serial (CSS or NRS) remote diagnostics on. 2: Network remote diagnostics.
5816 2	CE Call
	Lets the customer engineer start or end the remote machine check with CSS or NRS; to do this, push the center report key
5816 3	Function Flag
	Enables and disables remote diagnosis over the NRS network. [0~1/1] 0: Disables remote diagnosis over the network. 1: Enables remote diagnosis over the network.
5816 6	Device Information Call Display
	Controls if the item for initial setting of the screen for the NRS device-information notification-call is shown. [0~1/1] 0: Enabled. Item initial setting not shown. 1: Disable. Item for initial setting shown.
5816 7	SSL Disable
	Controls if RCG (Remote Communication Gate) confirmation is done by SSL during an RCG send for the NRS over a network interface. [0~1/1] 0: Yes. SSL not used. 1: No. SSL used.
5816 8	RCG Connect Timeout
	Sets the length of time (seconds) for the time-out when the RCG (Remote Communication Gate) connects during a call via the NRS network. [1~90/1 sec.]
5816 9	RCG Write to Timeout
	Sets the length of time (seconds) for the time-out when sent data is written to the RCG during a call over the NRS network. [0~100/1 sec.]
5816 10	RCG Read Timeout
	Sets the length of time (seconds) for the timeout when sent data is written from the RCG during a call over the NRS network. [0~100/1 sec.]
5816 11	Port 80 Enable
	Controls if permission is given to get access to the SOAP method over Port 80 on the NRS network. [0~1/1] 0: No. Access denied 1: Yes. Access granted.
5816 16	Connection Method
	Selects how the remote service is connected. 0: Internet 1: Dial-up



5816 21	RCG – C Registered
	This SP displays the Cumin installation end flag. 1: Installation completed 2: Installation not completed
5816 22	RCG – C Registered Detail
	This SP displays the Cumin installation status. 0: Basil not registered 1: Basil registered 2: Device registered
5816 23	Connect Type (N/M)
	This SP displays and selects the Cumin connection method. 0: Internet connection 1: Dial-up connection
5816 61	Cert. Expire Timing DFU
	Proximity of the expiration of the certification.
5816 62	Use Proxy
	This SP setting determines if the proxy server is used when the machine communicates with the service center.
5816 67	CERT: Up State
	Displays the status of the certification update.
	0 The certification used by Cumin is set correctly.
	1 The certification request (setAuthKey) for update has been received from the GW URL and certification is presently being updated.
	2 The certification update is completed and the GW URL is being notified of the successful update.
	3 The certification update failed, and the GW URL is being notified of the failed update.
	4 The period of the certification has expired and new request for an update is being sent to the GW URL.
	11 A rescue update for certification has been issued and a rescue certification setting is in progress for the rescue GW connection.
	12 The rescue certification setting is completed and the GW URL is being notified of the certification update request.
	13 The notification of the request for certification update has completed successfully, and the system is waiting for the certification update request from the rescue GW URL.
	14 The notification of the certification request has been received from the rescue GW controller, and the certification is being stored.
	15 The certification has been stored, and the GW URL is being notified of the successful completion of this event.
	16 The storing of the certification has failed, and the GW URL is being notified of the failure of this event.
	17 The certification update request has been received from the GW URL, the GW URL was notified of the results of the update after it was completed, but an certification error has been received, and the rescue certification is being recorded.
	18 The rescue certification of No. 17 has been recorded, and the GW URL is being notified of the failure of the certification update.

5816 68	CERT: Error
	Displays a number code that describes the reason for the request for update of the certification.
	0 Normal. There is no request for certification update in progress.
	1 Request for certification update in progress. The current certification has expired.
	2 An SSL error notification has been issued. Issued after the certification has expired.
	3 Notification of shift from a common authentication to an individual certification.
	4 Notification of a common certification without ID2.
	5 Notification that no certification was issued.
	6 Notification that GW URL does not exist.
5816 69	CERT: Up ID
	The ID of the request for certification.
5816 83	Firmware Up Status
	Displays the status of the firmware update.
5816 84	Non-HDD Firm Up
	This setting determines if the firmware can be updated, even without the HDD installed.
5816 85	Firm Up User Check
	This SP setting determines if the operator can confirm the previous version of the firmware before the firmware update execution. If the option to confirm the previous version is selected, a notification is sent to the system manager and the firmware update is done with the firmware files from the URL.
5816 86	Firmware Size
	Allows the service technician to confirm the size of the firmware data files during the firmware update execution.
5816 87	CERT: Macro Version
	Displays the macro version of the NRS certification
5816 88	CERT: PAC Version
	Displays the PAC version of the NRS certification.
5816 89	CERT: ID2 Code
	Displays ID2 for the NRS certification. Spaces are displayed as underscores (_). Asterisks (****) indicate that no NRS certification exists.
5816 90	CERT: Subject
	Displays the common name of the NRS certification subject. CN = the following 17 bytes. Spaces are displayed as underscores (_). Asterisks (****) indicate that no DESS exists.
5816 91	CERT: Serial Number
	Displays serial number for the NRS certification. Asterisks (****) indicate that no DESS exists.
5816 92	CERT: Issuer
	Displays the common name of the issuer of the NRS certification. CN = the following 30 bytes. Asterisks (****) indicate that no DESS exists.
5816 93	CERT: Valid Start
	Displays the start time of the period for which the current NRS certification is enabled.

5816 94	CERT: Valid End
	Displays the end time of the period for which the current NRS certification is enabled.
5816 200	Manual Polling
	No information is available at this time.
5816 201	Regist: Status
	Displays a number that indicates the status of the NRS service device.
	0 Neither the NRS device nor Cumin device are set.
	1 The Cumin device is being set. Only Box registration is completed. In this status the Basil unit cannot answer a polling request.
	2 The Cumin device is set. In this status the Basil unit cannot answer a polling request.
	3 The NRS device is being set. In this status the Cumin device cannot be set.
	4 The NRS module has not started.
5816 202	Letter Number
	Allows entry of the number of the request needed for the Cumin device.
5816 203	Confirm Execute
	Executes the inquiry request to the NRS GW URL.
5816 204	Confirm Result
	Displays a number that indicates the result of the inquiry executed with SP5816 203.
	0 Succeeded
	1 Inquiry number error
	2 Registration in progress
	3 Proxy error (proxy enabled)
	4 Proxy error (proxy disabled)
	5 Proxy error (Illegal user name or password)
	6 Communication error
	7 Certification update error
	8 Other error
	9 Inquiry executing
5816 205	Confirm Place
	Displays the result of the notification sent to the device from the GW URL in answer to the inquiry request. Displayed only when the result is registered at the GW URL.
5816 206	Register Execute
	Executes Cumin Registration.
5816 207	Register Result
	Displays a number that indicates the registration result.
	0 Succeeded
	2 Registration in progress
	3 Proxy error (proxy enabled)
	4 Proxy error (proxy disabled)
	5 Proxy error (Illegal user name or password)
	6 Communication error
	7 Certification update error
	8 Other error
	9 Registration executing



5816 208	Error Code		
	Displays a number that describes the error code that was issued when either SP5816 204 or SP5816 207 was executed.		
	Cause	Code	Meaning
	Illegal Modem Parameter	-11001	Chat parameter error
		-11002	Chat execution error
		-11003	Unexpected error
	Operation Error, Incorrect Setting	-12002	Inquiry, registration attempted without acquiring device status.
		-12003	Attempted registration without execution of an inquiry and no previous registration.
		-12004	Attempted setting with illegal entries for certification and ID2.
	Error Caused by Response from GW URL	-2385	Attempted dial up overseas without the correct international prefix for the telephone number.
		-2387	Not supported at the Service Center
		-2389	Database out of service
		-2390	Program out of service
		-2391	Two registrations for same device
		-2392	Parameter error
		-2393	Basil not managed
		-2394	Device not managed
		-2395	Box ID for Basil is illegal
		-2396	Device ID for Basil is illegal
		-2397	Incorrect ID2 format
		-2398	Incorrect request number format
5816 250	CommLog Print		
	Prints the communication log.		

5821	Remote Service Address Japan Only	
5821 1	CSS PI Device Code	Sets the PI device code. After you change this setting, you must turn the machine off and on.
5821 2	RCG IP Address	Sets the IP address of the RCG (Remote Communication Gate) destination for call processing at the remote service center. [00000000h~FFFFFFFFh/1]

5824	NVRAM Data Upload	
	Uploads the NVRAM data to an SD card (B140). Push Execute. Note: When uploading in this SP mode data, the front door must be open.	

5825	NVRAM Data Download	
	Downloads data from an SD card to the NVRAM in the machine. After downloading is completed, remove the card and turn the machine power off and on.	

5828	Network Setting				
5828 50	1284 Compatibility (Centro)	Enables and disables bi-directional communication on the parallel connection between the machine and a computer. [0~1/1] 0:Off 1: On			
5828 52	ECP (Centro)	Disables and enables the ECP feature (1284 Mode) for data transfer. [0~1/1] 0: Disabled 1: Enabled			
5828 65	Job Spooling	Switches job spooling spooling on and off. 0: No spooling 1: Spooling enabled			
5828 66	Job Spool Clear: Start Time	This SP determines whether the job interrupted at power off is resumed at the next power on. This SP operates only when SP5828 065 is set to 1. 1: Resumes printing spooled jog. 0: Clears spooled job.			
5828 69	Job Spool Protocol	This SP <input type="checkbox"/> etermines whether job spooling is enabled or disabled for each protocol. This is a 8-bit setting.			
		0	LPR	4	BMLinks (Japan Only)
		1	FTP (Not Used)	5	DIPRINT
		2	IPP	6	Reserved (Not Used)
		3	SMB	7	Reserved (Not Used)
5828 77	IPv4 DNS Server 2	Sets the IPv4 address for a DNS server. This address can be used among devices that have IPv4 devices (Ethernet, IPv4 Over 1394, IEEE 802.11b, etc.) Note: IPv4 Over 1394 applies to the B205/B209 only. The D007/D008 does not support IEEE 1394.			
5828 78	IPv4 DNS Server 3				
5828 79	Domain Name (Ethernet)				
5828 84	Setting List PrintPrint Settings List	Prints a list of the NCS parameter settings.			
5828 90	TELNET Operation SettingsTELNET (0:OFF 1:ON)	Disables or enables Telnet operation. If this SP is disabled, the Telnet port is closed. [0~1/1] 0: Disable 1: Enable			
5828 91	Web Operation (0:OFF 1:ON)	Disables or enables the Web operation. [0~1/1] 0: Disable 1: Enable			



5828 96	Rendezvous Operation	<p>This SP disables/enables Rendezvous operation. This is a set of protocols that allows a device on an IP network to automatically recognize and connect with other devices (such as a printer) on a network. Once a new device is connected to the network, it can be used immediately by every computer on the network. No special setup procedures or configuration settings are required</p> <p>1: Enable 0: Disable</p>
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5832	HDD Formatting	Enter the SP number for the partition to initialize, then press #. When the execution ends, cycle the machine off and on.
5832 1	HDD Formatting (All)	
5832 2	HDD Formatting (IMH)	
5832 3	HDD Formatting (Thumbnail)	
5832 4	HDD Formatting (Job Log)	
5832 5	HDD Formatting (Printer Fonts)	
5832 6	HDD Formatting (User Info)	
5832 7	Mail RX Data	
5832 8	Mail TX Data	
5832 9	HDD Formatting (Data for Design)	
5832 10	HDD Formatting (Log)	
5832 11	HDD Formatting (Ridoc I/F) (for Ridoc Desk Top Binder)	

5833	e-Cabinet Enable	<p>Enables the e-Cabinet function. Then, the user names in the cabinet are enabled for use with the POP server.</p> <p>[0~1/1]</p> <p>0: Disabled</p> <p>1: Enabled</p>
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5834	Operation Panel Image Exposure	<p>Enables and disables the operation panel read (dump) feature. After powering on the machine, set this option to 1 to enable this feature.</p> <p>0: Off (disable), 1: On (enable) DFU</p> <p><i>To reset the machine to 0, the machine must be turned off and on again. Selecting 0 for this option without cycling the power off and on does not restore the default setting (0).</i></p>
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5836	Capture Setting	
5836 1	Capture Function (0:Off 1:On)	
	With this function disabled, the settings related to the capture feature cannot be initialized, displayed, or selected. [0~1/1] 0: Disable 1: Enable	
5836 2	Panel Setting	
	Determines whether each capture related setting can be selected or updated from the initial system screen. [0~1/1] 0: Disable 1: Enable The setting for SP5836-001 has priority.	
5836 71	Reduction for Copy Color	[0~3/1] 0:1 1:1/2 2:1/3 3:1/4 DFU
5836 72	Reduction for Copy B&W Text	[0~6/1] 0:1 1:1/2 2:1/3 3:1/4 6:2/3
5836 73	Reduction for Copy B&W Other	[0~6/1] 0:1 1:1/2 2:1/3 3:1/4 6:2/3
5836 74	Reduction for Printer Color	[0~3/1] 0:1 1:1/2 2:1/3 3:1/4 DFU
5836 75	Reduction for Printer B&W	[0~6/1] 0 1 1:1/2 2:1/3 3:1/4 6:2/3
5836 76	Reduction for Printer B&W HQ	[1~5/1] 1:1/2 3:1/4 4:1/6 5:1/8
5836 77	Reduction for Printer Col 1200 dpi	
5836 78	Reduction for Printer B&W 1200 dpi	
5836 81	Format for Copy Color	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR DFU
5836 82	Format for Copy B&W Text	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
5836 83	Format Copy B&W Other	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
5836 84	Format for Printer Color	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR DFU
5836 85	Format for Printer B&W	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
5836 86	Format for Printer B&W HQ	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
5836 91	Default for JPEG	[5~95/1]
	Sets the JPEG format default for documents sent to the document management server with the MLB, with JPEG selected as the format. <i>Enabled only when optional File Format Converter (MLB: Media Link Board) is installed.</i>	

5839	IEEE 1394
	This SP is displayed only when an IEEE 1394 (firewire) card is installed. Note: This SP applies to the B205/B209 only. The D0070/D008 does not support IEEE 1394.
5839 4	Host Name
	Enter the name of the device used on the network. Example: RNP0000000000
5839 7	Cycle Master
	Enables or disables the cycle master function for the 1394 bus standard. [0~1/1] 0: Disable (Off) 1: Enable (On)
5839 8	BCR Mode
	Determines how BCR (Broadcast Channel Register) operates on the 1394 standard bus when the independent node is in any mode other than IRM. (NVRAM: 2-bits) [Always Effective]
5839 9	IRM 1394a Check
	Conducts a 1394a check of IRM when the independent node is in any mode other than IRM. [0~1/1] 0: Checks whether IRM conforms to 1394a 1: After IRM is checked, if IRM does not conform then independent node switches to IRM.
5839 10	Unique ID
	Lists the ID (Node_Unique_ID) assigned to the device by the system administrator. Bit0: Off Bit1: On OFF: Does not list the Node_Unique_ID assigned by the system administrator. Instead, the Source_ID of the GASP header in the ARP is used. ON: The Node_Unique_ID assigned by the system administrator is used, and the Source_ID of the GASP header in the ARP is ignored. Also, when the serial bus is reset, extra bus transactions are opened for the enumeration.
5839 11	Logout
	Handles the login request of the login initiator for SBP-2. (1-bit) Bit0: Off Bit1: On OFF: Disable (refuse login). Initiator retry during login. Login refusal on arrival of login request (standard operation) ON: Enable (force logout). Initiator retry during login. Login refusal on arrival of login request, and the initiator forces the login.
5839 12	Login
	Enables or disables the exclusive login feature (SBP-2 related). Bit0: Off Bit1: On OFF: Disables. The exclusive login (LOGIN ORB exclusive it) is ignored. ON: Enables. Exclusive login is in effect.

5839 13	Login MAX
	Sets the maximum number of logins from the initiator (6-bits) [0~63/1] 0: Reserved 63: Reserved

5840	IEEE 802.11b
5840 6	Channel MAX
	Sets the maximum range of the bandwidth for the wireless LAN. This bandwidth setting varies for different countries. [1~14/1]
5840 7	Channel MIN
	Sets the minimum range of the bandwidth for operation of the wireless LAN. This bandwidth setting varies for different countries. [1~14/1]
5840 11	WEP Key Select
	Determines how the initiator (SBP-2) handles subsequent login requests. [0~1/1] 0: If the initiator receives another login request while logging in, the request is refused. 1: If the initiator receives another login request while logging in, the request is refused and the initiator logs out. Note: Displayed only when the wireless LAN card is installed.



5841	Supply Name Setting	
	Press the User Tools key. These names appear when the user presses the Inquiry button on the User Tools screen.	
5841 11	StapleStd1	Standard Staples for B408 (SR790)
5841 12	StapleStd2	Standard Staples for B442 (SR820)
5841 13	StapleStd3	Not Used
5841 14	Staple Std4	Not Used

5842	Net File Analysis Mode Setting DFU		
	This is a debugging tool. It sets the debugging output mode of each Net File process. Bit SW 0011 1111	Bit	Groups
		0	System & other groups (LSB)
		1	Capture related
		2	Certification related
		3	Address book related
		4	Machine management related
		5	Output related (printing, delivery)
		6	Repository related

5844	USB
5844 1	Transfer Rate Sets the speed for USB data transmission. [Full Speed] [Auto Change]
5844 2	Vendor ID Sets the vendor ID: Initial Setting: 0x05A Ricoh Company [0x0000~0xFFFF/1] DFU
5844 3	Product ID Sets the product ID. [0x0000~0xFFFF/1] DFU
5844 4	Device Release No. Sets the device release number of the BCD (binary coded decimal) display. [0000~9999/1] DFU Enter as a decimal number. NCS converts the number to hexadecimal number recognized as the BCD.

5845	Delivery Server Setting These are delivery server settings.
5845 1	FTP Port No. [0~65535/1]
5845 2	IP Address (Primary) Use this SP to set the Scan Router Server address. The IP address under the transfer tab can be used with the initial system setting. [0~FFFFFFFF/1]
5845 5	Capture Server IP Address Sets the IP address that is assigned to the PC that the capture server (eCabinet or ScanRouter) operates. This IP address is set remotely when the delivery server (Scan Router) IO device is registered. This SP only enables the IP address permit access to the DNS browser names.
5845 6	Delivery Error Display Time Use this setting to set the length of time that the message is shown when a test error occurs during document transfer with the NetFile application and an external device. [0~999/1]
5845 8	IP Address (Secondary) Sets the IP address that is given to the computer that is the secondary delivery server for Scan Router. This SP lets you set only the IP address, and does not refer to the DNS setting.



5845 9	Delivery Server Model
	<p>Lets you change the model of the delivery server that is registered by the I/O device.</p> <p>[0~4/1]</p> <p>0: Unknown</p> <p>1: SG1 Provided</p> <p>2: SG1 Package</p> <p>3: SG2 Provided</p> <p>4: SG2 Package</p>
5845 10	Delivery Svr. Capability
	<p>Changes the functions that the registered I/O device can do.</p> <p>[0~255/1]</p> <p>Bit7 = 1 Comment information exists</p> <p>Bit6 = 1 Direct specification of mail address possible</p> <p>Bit5 = 1 Mail RX confirmation setting possible</p> <p>Bit4 = 1 Address book automatic update function exists</p> <p>Bit3 = 1 Fax RX delivery function exists</p> <p>Bit2 = 1 Sender password function exists</p> <p>Bit1 = 1 Function to link MK-1 user and Sender exists</p> <p>Bit0 = 1 Sender specification required (if set to 1, Bit6 is set to "0")</p>
5845 11	Delivery Svr.Capability (Ext)
	<p>These settings are for future use. They will let you increase the number of registered devices (in addition to those registered for SP5845 010).</p> <p>There are eight bits (Bit 0 to Bit 7). All are unused at this time.</p>

5846*	UCS Setting
5846 1	Machine ID (for Delivery Server)
	<p>Displays the unique device ID in use by the delivery server directory. The value is only displayed and cannot be changed.</p> <p>This ID is created from the NIC MAC or IEEE 1394 EUI.</p> <p>The ID is displayed as either 6-byte or 8-byte binary.</p>
5846 2	Machine ID Clear (Delivery Server)
	<p>Clears the unique ID of the device used as the name in the file transfer directory. Execute this SP if the connection of the device to the delivery server is unstable. After clearing the ID, the ID will be established again automatically by cycling the machine off and on.</p>
5846 3	Maximum Entries
	<p>Changes the maximum number of entries that UCS can handle.</p> <p>[2000~50000/1]</p> <p>If a value smaller than the present value is set, the UCS managed data is cleared, and the data (excluding user code information) is displayed.</p>

5846 6	Delivery Server Retry Timer
	Sets the interval for retry attempts when the delivery server fails to acquire the delivery server address book. [0~255/1 s] 0: No retries
5846 7	Delivery Server Retry Times
	Sets the number of retry attempts when the delivery server fails to acquire the delivery server address book. [0~255/1]
5846 8	Delivery Server Maximum Entries
	Lets you set the maximum number of account entries and information about the users of the delivery server controlled by UCS. [20000~50000/1]
5846 10	LDAP Search Timeout
	Sets the length of the time-out for the search of the LDAP server. [1~255/1]
5846 40	Addr Book Migration (SD -> HDD)
	<p>This SP moves the address book data from an SD card to the HDD. You must cycle the machine off and on after executing this SP.</p> <ol style="list-style-type: none"> 1. Turn the machine off. 2. Install the HDD. 3. Insert the SD card with the address book data in SD card slot C3. 4. Turn the machine on. 5. Do SP5846 040. 6. Turn the machine off. 7. Remove the SD card from SD card slot C3. 8. Turn the machine on. <p>Notes:</p> <ul style="list-style-type: none"> • Executing this SP overwrites any address book data already on the HDD with the data from the SD card. • We recommend that you back up all directory information to an SD card with SP5846 051 before you execute this SP. • After the address book data is copied to HDD, all the address book data is deleted from the source SD card. If the operation fails, the data is not erased from the SD card.
5846 41	Fill Addr Acl Info.
	<p>This SP must be executed immediately after installation of an HDD unit in a basic machine that previously had no HDD. The first time the machine is powered on with the new HDD installed, the system automatically takes the address book from the NVRAM and writes it onto the new HDD. However, the new address book on the HDD can be accessed only by the system administrator at this stage. Executing this SP by the service technician immediately after power on grants full address book access to all users.</p> <p>Procedure</p> <ol style="list-style-type: none"> 1. Turn the machine off. 2. Install the new HDD. 3. Turn the machine on. 4. The address book and its initial data are created on the HDD automatically. However, at this point the address book can be accessed by only the system administrator or key operator. 5. Enter the SP mode and do SP5846 041. After this SP executes successfully, any user can access the address book.

5846 47	Initialize Local Address Book																
	Clears all of the address information from the local address book of a machine managed with UCS.																
5846 48	Initialize Delivery Addr Book																
	Push [Execute] to delete all items (this does not include user codes) in the delivery address book that is controlled by UCS.																
5846 49	Initialize LDAP Addr Book																
	Push [Execute] to delete all items (this does not include user codes) in the LDAP address book that is controlled by UCS.																
5846 50	Initialize All Addr Book																
	Clears everything (including users codes) in the directory information managed by UCS. However, the accounts and passwords of the system administrators are not deleted.																
5846 51	Backup All Addr Book																
	Uploads all directory information to the SD card. Do this SP before replacing the HDD. The operation may not succeed if the HDD is damaged.																
5846 52	Restore All Addr Book																
	Downloads all directory information from the SD card. Upload the address book from the old HDD with SP5846 51 before removing it. Do SP5846 52 after installing the new HDD.																
5846 53	Clear Backup Info.																
	Deletes the address book uploaded from the SD card in the slot. Deletes only the files uploaded for that machine. This feature does not work if the card is write-protected. Note: After you do this SP, go out of the SP mode, turn the power off. Do not remove the SD card until the Power LED stops flashing.																
5846 60	Search Option																
	This SP uses bit switches to set up the fuzzy search options for the UCS local address book.																
	<table><tr><td>Bit</td><td>Meaning</td></tr><tr><td>0</td><td>Checks both upper/lower case characters</td></tr><tr><td>1</td><td rowspan="3">Japan Only</td></tr><tr><td>2</td></tr><tr><td>3</td></tr><tr><td>4</td><td>--- Not Used ---</td></tr><tr><td>5</td><td>--- Not Used ---</td></tr><tr><td>6</td><td>--- Not Used ---</td></tr><tr><td>7</td><td>--- Not Used ---</td></tr></table>	Bit	Meaning	0	Checks both upper/lower case characters	1	Japan Only	2	3	4	--- Not Used ---	5	--- Not Used ---	6	--- Not Used ---	7	--- Not Used ---
	Bit	Meaning															
	0	Checks both upper/lower case characters															
	1	Japan Only															
	2																
	3																
	4	--- Not Used ---															
	5	--- Not Used ---															
6	--- Not Used ---																
7	--- Not Used ---																
5846 62	Complexity Option 1																
	Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to <u>upper case</u> and sets the length of the password. [0~32/1] Note: <ul style="list-style-type: none">This SP does not normally require adjustment.This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.																

5846 63	<p>Complexity Option 2</p> <p>Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to <u>lower case</u> and defines the length of the password. [0~32/1]</p> <p>Note:</p> <ul style="list-style-type: none"> • This SP does not normally require adjustment. • This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.
5846 64	<p>Complexity Option 3</p> <p>Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to <u>numbers</u> and defines the length of the password. [0~32/1]</p> <p>Note:</p> <ul style="list-style-type: none"> • This SP does not normally require adjustment. • This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.
5846 65	<p>Complexity Option 4</p> <p>Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to <u>symbols</u> and defines the length of the password. [0~32/1]</p> <p>Note:</p> <ul style="list-style-type: none"> • This SP does not normally require adjustment. • This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.
5846 90	<p>Plain Data Forbidden</p> <p>Lets you to prevent the address from transmission as plain data. This is a security function that prevents unauthorized access to address book data. [0~1/1]</p> <p>0: No check. Address book data not protected. 1: Check. Enables operation of UCS without data from HDD or SC card and without creating address book information with plain data.</p>
5846 91	<p>FTP Auth. Port Settings</p> <p>Sets the FTP port to get the delivery server address book that is used in the individual authorization mode. [0~65535/1]</p>
5846 94	<p>Encryption Start</p> <p>Shows the status of the encryption function of the address book on the LDAP server. [0~255/1] No default</p>



5846 98	Bit SW2	
	These are the output items of debug mode for UCS (address book).	
	0: Off	
	1: On	
	Bit 0	Cash
	Bit 1	New Database
	Bit 2	Access Control
	Bit 3	Back-up Restore
	Bit 4	API Encryption/Encoding
5846 99	Bit SW	
	These are the output items of debug mode for UCS (address book).	
	0: Off	
	1: On	
	Bit 0	UCS API (Always On)
	Bit 1	GWIPC (Always On)
	Bit 2	Message (Always On)
	Bit 3	Lock Condition (Always On)
	Bit 4	Database
	Bit 5	FTP
	Bit 6	LDAP
	Bit 7	I/O Process



5847	Net File Resolution Reduction		
	5847 1 through 5847 6 changes the default settings of image data sent externally by the Net File page reference function. [0~2/1]		
	5847 21 sets the default for JPEG image quality of image files controlled by NetFile.		
	"NetFile" refers to jobs to be printed from the document server with a PC and the DeskTopBinder software.		
	5847 1	Rate After Copy Col	[0~5/1]
	5847 2	Rate for Copy B&W Text	[0~6/1]
	5847 3	Rate for Copy B&W Other	[0~6/1]
	5847 4	Rate for Printer Color	[0~5/1]
	5847 5	Rate for Printer B&W	[0~6/1]
	5847 6	Rate for Printer B&W HQ	[0~6/1]
	0: 1x 1: 1/2x 2: 1/3x 3: 1/4x 4: 1/6x 5: 1/8x 6: 2/3x ¹ ¹ : "6: 2/3x" applies to 003, 005, 006 only.		
5847 21	Network Quality Default for JPEG		
	Sets the default value for the quality of JPEG images sent as NetFile pages. This function is available only with the MLB (Media Link Board) option installed. [5~95/1]		

5848	Web Service	
	5847 2 sets the 4-bit switch assignment for the access control setting. Setting of 0001 has no effect on access and delivery from Scan Router. 5847 100 sets the maximum size of images that can be downloaded. The default is equal to 1 gigabyte.	
5848 1	Access Control. : NetFile (Lower 4 Bits Only)	
	Bit switch settings. 0000: No access control 0001: Denies access to Desk Top Binder. Access and deliveries from Scan Router have no effect on capture.	
5848 2	Acc. Ctrl.: Repository (only Lower 4 Bits)	0000: No access control 0001: Denies access to DeskTop Binder.
5848 3	Acc. Ctrl.: Doc. Svr. Print (Lower 4 Bits)	Switches access control on and off. 0000: OFF, 0001: ON
5848 4	Acc. Ctrl.: User Directory (Lower 4 Bits)	
5848 5	Acc. Ctrl.: Delivery Input (Lower 4 Bits)	
5848 7	Acc. Ctrl Comm. Log Fax (Lower 4 Bits)	
5848 9	Acc. Ctrl.: Job Control (Lower 4 Bits)	
5848 11	Acc. Ctrl: Device Management (Lower 4 Bits)	
5848 13	Acc. Ctrl: Fax (Lower 4 Bits)	
5848 21	Acc. Ctrl: Delivery (Lower 4 Bits)	
5848 22	Acc. Ctrl: User Administration (Lower 4 Bits)	
5848 41	Acc. Ctrl: Security Setting (Lower 4 Bits only)	
5848 100	Repository: Download Image Max. Size	[1~1024/1 K]
5848 201	Access Ctrl: Regular Trans	
	No information is available at this time. 0: Not allowed 1: Allowed	
5848 210	Setting: Log Type: Job 1	
	No information is available at this time.	
5848 211	Setting: Log Type: Job 2	
	No information is available at this time.	
5848 212	Setting: Log Type: Access	
	No information is available at this time.	
5848 213	Setting: Primary Srv	
	No information is available at this time.	
5848 214	Setting: Secondary Srv	
	No information is available at this time.	
5848 215	Setting: Start Time	
	No information is available at this time.	
5848 216	Setting: Interval Time	
	No information is available at this time.	
5848 217	Setting: Timing	
	No information is available at this time.	



5850*	Address Book Function			
5850 3	Replacement of Circuit Classification			
	The machine is shipped ready to use with a G3 line. Use this SP to switch all at once to G4 after adding a G4 line. If the G4 line becomes unusable for some reason, you can use this SP to switch easily back to G3			
	Bit		Bit	
	1	G3	8	G3-3 Internal
	2	Internal	9	G3 Open Line
	3	G3-1	10	Internal Open Line
	4	G3-1 Internal	11	I-G3
	5	G3-2	12	I-G3 Internal
	6	G3-2 Internal	13	G4
	7	G3-3		

5849	Installation Date	
	Displays or prints the installation date of the machine.	
5849 1	Display	The "Counter Clear Day" has been changed to "Installation Date" or "Inst. Date".
5849 2	Switch to Print	Determines whether the installation date is printed on the printout for the total counter. [0~1/1] 0: No Print 1: Print

5851	Bluetooth Mode	
	Sets the operation mode for the Bluetooth Unit. Press either key. [0:Public] [1: Private]	

5853	Stamp Data Download	
	Push [Execute] to download the fixed stamp data from the machine ROM onto the hard disk. Then these stamps can be used by the system. If this is not done, the user will not have access to the fixed stamps ("Confidential", "Secret", etc.). You must always execute this SP after replacing the HDD or after formatting the HDD. Always switch the machine off and on after executing this SP.	

5856	Remote ROM Update	
	When set to "1" allows reception of firmware data via the local port (IEEE 1284) during a remote ROM update. This setting is reset to zero after the machine is cycled off and on. Allows the technician to upgrade the firmware using a parallel cable [0~1/1] 0: Not allowed 1: Allowed	

5857	Save Debug Log
5857 1	On/Off (1:ON 0:OFF) Switches on the debug log feature. The debug log cannot be captured until this feature is switched on. [0~1/1] 0: OFF 1: ON
5857 2	Target (2: HDD 3: SD) Selects the destination where the debugging information generated by the event selected by SP5858 will be stored if an error is generated [2~3 /1] 2: HDD 3: SD Card
5857 5	Save to HDD Specifies the decimal key number of the log to be written to the hard disk.
5857 6	Save to SD Card Specifies the decimal key number of the log to be written to the SD Card.
5857 9	Copy HDD to SD Card (Latest 4 MB) Takes the most recent 4 MB of the log written to the hard disk and copies them to the SD Card. A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to 4MB can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card.
5857 10	Copy HDD to SD Card Latest 4 MB Any Key) Takes the log of the specified key from the log on the hard disk and copies it to the SD Card. A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to 4 MB can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card. This SP does not execute if there is no log on the HDD with no key specified.
5857 11	Erase HDD Debug Data Erases all debug logs on the HDD
5857 12	Erase SD Card Debug Data Erases all debug logs on the SD Card. If the card contains only debugging files generated by an event specified by SP5858, the files are erased when SP5857 010 or 011 is executed. To enable this SP, the machine must be cycled off and on.
5857 13	Free Space on SD Card Displays the amount of space available on the SD card.
5857 14	Copy SD to SD (Latest 4MB) Copies the last 4MB of the log (written directly to the card from shared memory) onto an SD card.
5857 15	Copy SD to SD (Latest 4MB Any Key) This SP copies the log on an SD card (the file that contains the information written directly from shared memory) to a log specified by key number.
5857 16	Make HDD Debug This SP creates a 32 MB file to store a log on the HDD.
5857 17	Make SD Debug This SP creates a 4 MB file to store a log on an SD card.

5858*	Debug Save When	
	These SPs select the content of the debugging information to be saved to the destination selected by SP5857 002. SP58583 stores one SC specified by number. <i>Refer to Section 4 for a list of SC error codes.</i>	
58581*	Engine SC Error (0:OFF 1:ON)	Stores SC codes generated by copier engine errors.
58582*	Controller SC Error (0:OFF 1:ON)	Stores SC codes generated by GW controller errors.
58583*	Any SC Error (0:OFF 1:ON)	[0~65535 / 0 / 1]
58584*	Jam (0:OFF 1:ON)	Stores jam errors.

5859	Debug Log Save Function	
5859 1	Key 1	These SPs allow you to set up to 10 keys for log files for functions that use common memory on the controller board. [-9999999~9999999/1]
5859 2	Key 2	
5859 3	Key 3	
5859 4	Key 4	
5859 5	Key 5	
5859 6	Key 6	
5859 7	Key 7	
5859 8	Key 8	
5859 9	Key 9	
5859 10	Key 10	



5860	SMTP/POP3/IMAP4	
5860 1	SMTP Server Name	
	Allows you to specify the name of the SMTP server. Enter either the host name or the IP address. If you enter the host name, you must also specify the name of the DNS server.	
5860 2	SMTP Server Port Number	
	This SP sets the number of the SMTP server port. [1~65535/1]	
5860 3	SMTP Certification	
	This setting switches SMTP certification on and off for mail sending. 0: Off 1: On	
5860 4	SMTP Certification User Name	
	Allows you to set the user name to be used for SMTP certification. This user name is used only when the user name for SMTP certification has not been selected with the software application. The user name includes the "realmID" string.	
5860 5	SMTP Certification Password	
	Allows you to set the password to be used for SMTP certification. The length of the password is limited to 128 alphanumeric characters.	
5860 6	SMTP Certification Encryption	
	This setting determines whether the password for SMTP certification is encrypted. 0: Automatic 1: No encryption done 2: Encryption done	

5860 7	POP Before SMTP
	This setting determines whether the transmission connects with the POP server first for certification before it connects to the SMTP server for sending. 0: No connection to POP server 1: Connection to POP server
5860 8	Standby Wait Time After POP3 Certification
	This SP sets the amount of time to allow for the connection to the SMTP server after the transmission has connected to the POP server and been certified during the execution of POP Before SMTP. [0~10000/ 300 /1]
5860 9	RX Protocol
	This SP specifies POP3 protocol or switches off receiving. 0: No receiving 1: POP3 protocol
5860 10	POP3/IMAP4 Server Name
	This SP specifies the POP3/IMAP4 server that uses POP Before SMTP during mail receiving. The server can be specified either by IP address or host name. If you use the host name, you also need the name of the DNS server.
5860 11	POP3/IMAP4 User Name
	This SP sets the user name used during POP3/IMAP4 certification.
5860 12	POP3/IMAP4 Password
	This SP sets the password used during POP3/IMAP4 certification.
5860 13	POP3/IMAP4 Certification Encryption
	This SP specifies whether password encryption is done for POP3/IMAP4 certification. 0: Automatic 1: No encryption done 2: Encryption done
5860 14	POP3 Server Port Number
	This SP sets the number of the POP3 server port. [1~65535/ 110 /1]
5860 15	IMAP4 Server Port Number
	This SP sets the number of the IMAP4 server port. [1~65535/ 143 /1]
5860 16	SMTP RX Port Number
	This SP sets the number of the port that receives SMTP mail. [1~65535/ 25 /1]
5860 17	Mail RX Interval
	This SP sets the timing for mail received at regular intervals. [2~1440/15/1 min.] Note: Setting this SP to "0" switches off receiving mail at timed intervals.
5860 18	Limit Size of RX Mail
	This SP specifies the maximum size of mail that can be received. [1~50/2/1 MB]
5860 19	Server Mail Store
	This SP setting determines whether received mail is stored on the server. 0: Received mail not stored 1: All received mail stored 2: Stores only mail that generated errors during receiving

5860 20	Partial Mail Receive Timeout
	<p>[1~168/72/1]</p> <p>Sets the amount of time to wait before saving a mail that breaks up during reception. The received mail is discarded if the remaining portion of the mail is not received during this prescribed time.</p>
5860 21	MDN Response RFC2298 Compliance
	<p>Determines whether RFC2298 compliance is switched on for MDN reply mail.</p> <p>[0~1/1]</p> <p>0: No</p> <p>1: Yes</p>
5860 22	SMTP Auth. From Field Replacement
	<p>Determines whether the FROM item of the mail header is switched to the validated account after the SMTP server is validated.</p> <p>[0~1/1]</p> <p>0: No. "From" item not switched.</p> <p>1: Yes. "From" item switched.</p>
5860 23	SMTP Certification Account Mail
	<p>This is the mail address for SMTP certification. When SMTP certification is done in response to a send request for a document or text mail, this SP sets the mail address for the SMTP protocol MAIL FROM command in the following cases:</p> <ul style="list-style-type: none"> • When the SMTP certification information has not been set from the software application. • When the SMTP certification information for UCS has been set or not set on the mainframe with the User Tools.
5860 24	POP3/IMAP4 Account Mail Address
	<p>This is the mail address for POP Before SMTP mail address. When POP Before SMTP certification is done in response to a send request for a document or text mail, this SP sets the mail address for the SMTP protocol MAIL FROM command in the following cases:</p> <ul style="list-style-type: none"> • When the POP Before SMTP certification information has not been set from the software application. • When the SMTP certification information for UCS has been set or SMTP certification information has not set on the mainframe with the User Tools. • Also, when SP5960 022 is set to "1" (Yes – "From" item switched), this mail address is inserted into the header for the "From" item.
5860 25	SMTP Auth Direct Sending
	<p>Occasionally, all SMTP certifications may fail with SP5860 006 set to "2" to enable encryption during SMTP certification for the SMTP server. This can occur if the SMTP server does not meet RFC standards. In such cases you can use this SP to set the SMTP certification method directly. However, this SP can be used only after SP5860 003 has been set to "1" (On).</p> <p>Bit0: LOGIN</p> <p>Bit1: PLAIN</p> <p>Bit2: CRAM_MD5</p> <p>Bit3: DIGEST_MD5</p> <p>Bit4 to Bit 7: Not Used</p>

5866	E-Mail (Date Field)
	Not used.

5870	Common Key Info Writing	
	Writes to flash ROM the common proof for validating the device for NRS specifications.	
5870 1	Writing	Note: These SPs are for future use and currently are not used.
5870 3	Initialize	

5873	SD Card Apli.	
	Allows you to move applications from one SD card another. For more, see the Printer/Scanner Manual for the B205/B209 or D007/D008.	
5873 1	Move Exec	Executes the move from one SD card to another.
5873 2	Undo Exec	This is an undo function. It cancels the previous execution.

5875	SC Auto Reboot	
	This SP determines whether the machine reboots automatically when an SC error occurs. Note: The reboot does not occur for Type A SC codes.	
5875 1	Reboot Setting	The machine reboots automatically when the machine issues an SC error and logs the SC error code. If the same SC occurs again, the machine does not reboot.
5875 2	Reboot Type	The machine does not reboot when an SC error occurs.

5878	Option Setup	Data Overwrite Security (DOS) Setup
	Press [Execute] to initialize the Data Overwrite Security option for the copier. For more, see "1.16 MFP Controller Options" in Section "1. Installation".	

5879	Editing Option Setup DFU	
	This SP is used to install the edit option card.	

5907	Plug & Play Maker/Model Name	
	Selects the brand name and the production name for Windows Plug & Play. This information is stored in the NVRAM. If the NVRAM is defective, these names should be registered again. After selecting, press the "Original Type" key and "#" key at the same time. When the setting is completed, the beeper sounds five times.	

5908*	LCT Paper Size	
	Selects the paper size for the LCT. Use this SP after changing the paper size in the optional LCT (i.e., after changing the side plate position for the LCT). [0~1 / 1 / 1] North America 0: A4 1: LT [0~1 / 0 / 1] Other Areas (Europe/Asia) 0: A4 1: LT	



5912*	PCU Alarm Setting	
5912 2	Interval Display	<p>Sets the PCU alarm interval. When the machine reaches this value, the PCU alarm will be displayed on the LCD to inform the user.</p> <p>[0 ~ 255 / 60 / 1 k copies/step]</p> <p>Note: The zero setting switches the alarm off.</p>

5913	Switchover Permission Time	
5913 2	Print Application Timer	<p>Sets the length of time to elapse before allowing another application to take control of the display when the application currently controlling the display is not operating because a key has not been pressed.</p> <p>[3~30/1 s]</p>
5913 102	Print Application Set	<p>This SP prescribes the time interval to expire before the machine shifts to another application when another application currently holds access control for the standby mode while there is no key input.</p> <p>[0~1/1/1]</p>

5915*	Mechanical Counter Detection	
		<p>Checks whether the mechanical counter inside the inner cover is connected or not.</p> <p>Display:</p> <p>0:Not detected</p> <p>1:Detected</p> <p>2:Unknown</p>

5921*	Exhaust Fan Control	
		<p>Sets the timing for slowing the exhaust fan motor speed or shutting the motor off for normal operation, depending on the following conditions:</p> <ol style="list-style-type: none"> 1. After the machine has entered energy saver mode or stand-by mode, the machine slows the fan speed after this time runs out. 2. After the machine has entered the auto off mode or an error occurs, the machine stops the fan after this time runs out. <p>[30 ~ 120 / 30 s / 1 s]</p>

5923*	Border Remove Area Switching	
		<p>Toggles between two settings that affect the appearance of the pages for border removal and printed facing pages: (1) Using the original area as the allotted area, or (2) Using only the copy paper as the allotted area.</p> <p>[0 = Original base, 1 = Copy base]</p> <p>0: Original area used as base</p> <p>1: Copy used as the base</p>



5967	Copy Server: Set Function
	Enables and disables the document server. This is a security measure that prevents image data from being left in the temporary area of the HDD. After changing this setting, you must switch the main switch off and on to enable the new setting.[0~1/1] 0: ON 1: OFF

5974	Cherry Server
	Selects which version of the Scan Router application program, "Light" or "Full (Professional)", is installed. [0 ~ 1 / 0 / 1 /step] 0: <i>Light version (supplied with this machine)</i> 1: <i>Full version (optional)</i>


5985	Device Setting	
	The NIC and USB support features are built into the GW controller. Use this SP to enable and disable these features. In order to use the NIC and USB functions built into the controller board, these SP codes must be set to "1".	
5985 1	On Board NIC	0: Disable 1: Enable
5985 2	On Board USB	

5990	SP Print Mode	SMC Print
	In the SP mode, press Copy Window to move to the copy screen, select the paper size, then press Start. Select A4/LT (Sideways) or larger to ensure that all the information prints. Press SP Window to return to the SP mode, select the desired print, and press Execute.	
5990 1	All (Data List)	
5990 2	SP (Mode Data List)	
5990 3	User Program	
5990 4	Logging Data	
5990 5	Diagnostic Report	
5990 6	Non-Default (Prints only SPs set to values other than defaults.)	
5990 7	NIB Summary	
5990 8	Capture Log	
5990 21	Copier User Program	
5990 22	Scanner SP	
5990 23	Scanner User Program	



5995	Factory Mode	DFU
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5996	Machine State DFU	
5996 1	Destination	Shows intended destination of the engine board. 0: Japan 1: North America 2: Europe 3: Mainland China 4: Taiwan
5996 2	SBCU ID	Displays the CPM information for the engine board. For example, 25 (25 cpm), 30 (30 cpm), and so on.
5996 3	IPU ID	Displays the IPU ID (presently fixed at "30").

SP6XXX: Peripherals

6006*	DF Adjustment	
	These settings adjust the registration and other settings for the ADF mode. Use the  key to toggle between + and - before entering a value. For more details, see "Replacement and Adjustment - Copy Adjustment" for details.	
6006 1	Side-to-Side (For Simplex)	[-5.0 ~ +5.0 / 0.0 / 0.1 mm/step]
6006 2	Leading Edge	
6006 3	Trailing Edge Erase	Adjusts the trailing edge erase margin. [-5.0 ~ +5.0 / 1.0 / 0.1 mm/step]
6006 4	Side-to-Side/Rear (For Duplex)	Adjusts the side-to-side registration on the rear side of the original. [-5.0 ~ +5.0 / 0.0 / 0.1 mm/step]
6006 5	Sub Scan Magnification	Adjusts the sub scan magnification. [-5.0 ~ +5.0 / 0.0 / 0.1 % step]
6006 6	Skew Correction	Selects whether skew correction is done. 0 = Off, 1 = On
6006 7	Original Buckle Adj	Adjusts the amount of original buckle at the ARDF registration roller when the ARDF feeds the back side of the original. [-5.0 ~ +5.0 / 0.0 / 0.1 mm/step]







6007	ADF Input Check
	Displays the signals received from sensors and switches of the ARDF. (➡5.1.5)

6008	ADF Output Check
	Switches on each electrical component (ARDF motor, solenoid, etc.) of the ARDF for testing. (➡5.1.6) Press  to switch on or  to switch off.

6009	ADF Free Run
	Performs an ARDF free run in duplex mode. Press  to start. 1: To Start, 0: To cancel This is a general free run controlled from the copier. For more detailed free run modes, see the ARDF manual.

6010*	Stamp Position Adjustment
	Adjusts the stamp position in the sub-scan direction in fax mode. [-5.0 ~ +5.0 / 0 / 1 mm/step]

6016*	ADF Original Size Detection
	Selects whether the machine determines that the original is A4/LT, or 8K/16K when the APS sensor in the ADF does not detect the original size. 8K/16K is not available for 115V machines. [0 = Normal (LT for USA models, A4 for Europe/Asia models) 1 = Reversed [A4 for USA models, LT for Europe/Asia models] 2 = 8K/16K]

6105*	Staple Position Adjustment	
	Adjusts the staple position in the main scan direction when using the two-tray finisher. [-3.5~+3.5 / 0.0 / 0.5 mm step] <i>Press  to toggle ±. A larger value shifts the staple toward the edge of the paper.</i>	
6117	Finisher Input Check	
	Displays the signals received from finisher sensors and switches. ( 5.1.5)	
6118	Finisher Output Check	
	Switches on each electrical component of the finisher for testing. ( 5.1.6) Press  to switch on or  to switch off.	
6802	ADF Mounted	
	Displays the model number of the ADF (ALPS-C-0x03) installed on the machine.	
6901	ADF APS Data Display	
	Displays the status of the original size sensors in the ADF. ( 5.1.9)	
6910*	ADF Shading Interval Time	
	Adjusts the interval for shading processing in DF mode. <i>Light and heat may affect the scanner response. If copy quality indicates that white level is drifting during a DF copy job, reduce this setting.</i> [0 ~ 120 / 20s / 1s/step]	
6920	DF Check	
6920 1	DF GATE IN	DFU 0 = Gate, 1 = Asart
6920 2	DF TXD Break	DFU 0 = Off, 1 = On
6920 3	Serial Communication	DFU 0 = NG, 1 = OK
6920 4	Original Set	DFU 0 = Off, 1 = On
6920 5	Serial Check	DFU
6925	Bridge/Duplex/By-Pass/Loop Back DFU	
6925 1	Practice	DFU
6925 2	Result	DFU

SP7XXX: Data Log

7001*	Main Motor Operation Time The number of prints and drive time for drum revolutions can be obtained by counting the main motor revolution time. If the amount of the time required for the drum to revolve to print 1 copy increases, this data combined with the number of copies can be used to analyze problems and could be useful for future product development. Display: 0000000~9999999 min.
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7401*	Total SC Counter Displays the total number of service calls that have occurred.
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7403*	SC History	
7403 1	Latest	Displays the most recent 10 service calls.
7403 2	Latest 1	
7403 3	Latest 2	
7403 4	Latest 3	
7403 5	Latest 4	
7403 6	Latest 5	
7403 7	Latest 6	
7403 8	Latest 7	
7403 9	Latest 8	
7403 10	Latest 9	

7502*	Total Paper Jam Counter Displays the total number of paper jams.
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7503*	Total Original Jam Counter Displays the total number of original jams.
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7504*	Total Jams by Location
	These SPs display the total number of paper jams by location. A "Check-in" (paper late) error occurs when the paper fails to activate the sensor at the precise time. A "Check-out" ("paper lag") paper jam occurs when the paper remains at the sensor for longer than the prescribed time.
7504 1	At power on
7504 3	Upper relay sensor (Lag)
7504 4	Lower relay sensor (Lag)
7504 5	Vertical transport sensor (Late) (optional bank)
7504 6	Relay sensor (Late) (optional LCT)
7504 7	By-pass Non-Feed
7504 10	Duplex Non-Feed
7504 11	Registration sensor (Late)
7504 12	Paper exit sensor (Late)
7504 13	Bridge relay sensor (Late)
7504 14	Bridge exit sensor (Late)
7504 15	Duplex entrance sensor (Late)
7504 16	Duplex exit sensor (Late)
7504 17	1 bin tray exit sensor (Late)
7504 20	Finisher entrance sensor
7504 21	Finisher shift tray exit sensor
7504 23	Finisher staple tray paper sensor
7504 24	Finisher stack feed-out belt HP sensor
7504 26	Finisher paper taking out
7504 27	Finisher drive error
7504 28	Finisher tray lift error
7504 29	Finisher jogger drive error
7504 30	Finisher tray shift drive error
7504 31	Finisher stapler error
7504 32	Finisher stack-feed out error
7504 33	Finisher feed out error
7504 34	Finisher no response
7504 53	Transport Sensor 1 (Off Check)
7504 54	Transport Sensor 2 (Off Check)
7504 55	Transport Sensor 3 (Off Check)
7504 56	LCT Relay Sensor (Off Check)
7504 57	U Relay Sn (Lag) from Bypass
7504 61	Registration sensor (Lag)
7504 62	Paper exit sensor (Lag)
7504 63	Bridge relay sensor (Lag)
7504 64	Bridge exit sensor (Lag)
7504 65	Duplex entrance sensor (Lag)
7504 66	Duplex exit sensor (Lag)
7504 67	1 bin tray exit sensor (Lag)

7505	Total Original Jam by Location
	Displays the total number of original jams by location. These jams occur when the original does not activate the sensors. A Check-in ("paper late") error occurs when the paper fails to activate the sensor at the precise time. a Check-out ("paper lag") paper jam occurs when the paper remains at the sensor for longer than the prescribed time.
7505 1	At Power On
7505 5	Registration Sensor (On Check)
7505 6	Exit Sensor (On Check)
7505 7	Inverter Sensor (On Check)
7505 55	Registration Sensor (Off Check)
7505 56	Exit Sensor (Off Check)
7505 57	Inverter Sensor (Off Check)

7506*	Jam Count by Copy Size	
7506 5	A4 LEF	Displays the total number of copy jams by paper size.
7506 6	A5 LEF	
7506 14	B5 LEF	
7506 038	LT LEF	
7506 044	HLT LEF	
7506 132	A3 SEF	
7506 133	A4 SEF	
7506 134	A5 SEF	
7506 141	B4 SEF	
7506 142	B5 SEF	
7506 160	DLT SEF	
7506 164	LG SEF	
7506 166	LT SEF	
7506 172	HLT SEF	
7506 255	Others	

7507*	Plotter (Copy) Jam History				
7507 1	Last	Displays the copy jam history (the most recent 10 jams) Sample Display: CODE:007 SIZE:05h TOTAL:0000334 DATE:Mon Mar 15 11:44:50 2000 where: CODE is the SP7504-*** number (see above). SIZE is the ASAP paper size code in hex. TOTAL is the total jam error count (SP7003) DATE is the date the jams occurred.			
7507 2	Latest 1				
7507 3	Latest 2				
7507 4	Latest 3				
7507 5	Latest 4				
7507 6	Latest 5				
7507 7	Latest 6				
7507 8	Latest 7				
7507 9	Latest 8				
7507 10	Latest 9				
Size	Code	Size	Code	Size	Code
A4 (S)	05	A3 (L)	84	DLT (L)	A0
A5 (S)	06	A4 (L)	85	LG (L)	A4
B5 (S)	0E	A5 (L)	86	LT (L)	A6
LT (S)	26	B4 (L)	8D	HLT (L)	AC
HLT (S)	2C	B5 (L)	8E	Others	FF

7508*	Original Jam History	
7508 1	Last	Displays the original jam history (the most recent 10 jams). Sample Display: CODE:007 SIZE:05h TOTAL:0000334 DATE:Mon Mar 15 11:44:50 2000 where: CODE is the SP7505*** number (see above). SIZE is the ASAP paper size code in hex. TOTAL is the total error count (SP7002001) DATE is the date the jams occurred.
7508 2	Last 1	
7508 3	Last 2	
7508 4	Last 3	
7508 5	Last 4	
7508 6	Last 5	
7508 7	Last 6	
7508 8	Last 7	
7508 9	Last 8	
7508 10	Last 9	

7801	ROM Version/Firmware Version	
	This SP codes display the firmware versions of all ROMs in the system, including the mainframe, the ARDF, and peripheral devices.	

7803*	PM Counter Display	
	Displays the PM counter since the last PM.	

7804	PM Counter Resets	
	Resets the PM counter. To reset, press Execute on the touch panel.	

7807	SC/Jam Counter Reset	
	Resets the SC and jam counters. To reset, press Execute on the touch panel. This SP does not reset the jam history counters: SP7507, SP7508.	

7826	MF Error Counter Japan Only	
	Displays the number of counts requested of the card/key counter.	
7826 1	Error Total	A request for the count total failed at power on. This error will occur if the device is installed but disconnected.
7826 2	Error Staple	The request for a staple count failed at power on. This error will occur if the device is installed but disconnected.

7827	MF Error Counter Clear	
	Press Execute to reset to 0 the values of SP7826. Japan Only	

7832	Self-Diagnosis Result Display	
	Execute to open the "Self-Diagnostics Result Display" to view details about errors. Use the keys in the display on the touch-panel to scroll through all the information. If no errors have occurred, you will see the "No Error" message on the screen.	

7834	Clear Pixel Coverage Data		
	These SPs clear the counters for the following items.		
7834 1	Last & Average		
7834 2	Toner Bottles		
7834 3	Page Count: Bottle		
7834 4	Dot Coverage Clear		
7834 255	All Coverage Counts		

7836	Total Memory Size		
	Displays the memory capacity of the controller system.		

7852*	ADF Exposure Glass		
	Counts the number of occurrences (0 ~ 65,535) when dust was detected on the scanning glass of the ADF.		
7852 1*	Detect Count	Counts the occurrences. Counting is done only if SP4999 1 (ADF Scan Glass Dust Check) is switched on.	
7852 2*	Counter Clear	Clears the count. Memory All Clear (SP5801) resets this counter to zero.	

7901*	Assert Info. DFU		
	These SP numbers display the results of the occurrence of the most recent SC code generated by the machine.		
7991 1*	File Name	Module name	
7991 2*	Line Number	Number of lines	
7991 3*	Location	Value	

7909	PCU Counter Display		
	Displays the value of the PCU counter (number of copies since the last PCU change).		

7999	Engine Debug Log Switch		
	This SP switches the contents of the debug log.		
0	RHM log (all)	4	Scanner log 2
1	Plotter log	5	Scanner log 3
2	Print log	6	Scanner log 4
3	Scanner log 1	7-255	RHM log (all)

SP8-xxx: Data Log2

Many of these counters are provided for features that are currently not available, such as sending color faxes, and so on. However, here are some Group 8 codes that when used in combination with others, can provide useful information.

SP Numbers	What They Do
SP8211~SP8216	The number of pages scanned to the document server.
SP8401~SP8406	The number of pages printed from the document server
SP8691~SP8696	The number of pages sent from the document server

Specifically, the following questions can be answered:

- How is the document server actually being used?
- What application is using the document server most frequently?
- What data in the document server is being reused?

Most of the SPs in this group are prefixed with a letter that indicates the mode of operation (the mode of operation is referred to as an 'application'). Before reading the Group 8 Service Table, make sure that you understand what these prefixes mean.

PREFIXES	WHAT IT MEANS	
T:	Total: (Grand Total).	Grand total of the items counted for all applications (C, F, P, etc.)..
C:	Copy application.	Totals (pages, jobs, etc.) executed for each application when the job was <i>not</i> stored on the document server.
F:	Fax application.	
P:	Print application.	
S:	Scan application.	
L:	Local storage (document server)	Totals (jobs, pages, etc.) for the document server. The L: counters work differently case by case. Sometimes, they count jobs/pages stored on the document server; this can be in document server mode (from the document server window), or from another mode, such as from a printer driver or by pressing the Store File button in the Copy mode window. Sometimes, they include occasions when the user uses a file that is already on the document server. Each counter will be discussed case by case.
O:	Other applications (external network applications, for example)	Refers to network applications such as Web Image Monitor. Utilities developed with the SDK (Software Development Kit) will also be counted with this group in the future.

The Group 8 SP codes are limited to 17 characters, forced by the necessity of displaying them on the small LCDs of printers and faxes that also use these SPs. Read over the list of abbreviations below and refer to it again if you see the name of an SP that you do not understand.

Key for Abbreviations

ABBREVIATION	WHAT IT MEANS
/	"By", e.g. "T:Jobs/Apl" = Total Jobs "by" Application
>	More (2> "2 or more", 4> "4 or more")
AddBook	Address Book
Apl	Application
B/W	Black & White
Bk	Black
C	Cyan
ColCr	Color Create
ColMode	Color Mode
Comb	Combine
Comp	Compression
Deliv	Delivery
DesApl	Designated Application. The application (Copy, Fax, Scan, Print) used to store the job on the document server, for example.
Dev Counter	Development Count, no. of pages developed.
Dup, Duplex	Duplex, printing on both sides
Emul	Emulation
FC	Full Color
FIN	Post-print processing, i.e. finishing (punching, stapling, etc.)
Full Bleed	No Margins
GenCopy	Generation Copy Mode
GPC	Get Print Counter. For jobs 10 pages or less, this counter does not count up. For jobs larger than 10 pages, this counter counts up by the number that is in excess of 10 (e.g., for an 11-page job, the counter counts up 11-10 =1)
IFax	Internet Fax
ImgEdt	Image Edit performed on the original with the copier GUI, e.g. border removal, adding stamps, page numbers, etc.
K	Black (YMCK)
LS	Local Storage. Refers to the document server.
LSize	Large (paper) Size
Mag	Magnification
MC	One color (monochrome)
NRS	New Remote Service, which allows a service center to monitor machines remotely. "NRS" is used overseas, "CSS" is used in Japan.
Org	Original for scanning
OrgJam	Original Jam
Palm 2	Print Job Manager/Desk Top Editor: A pair of utilities that allows print jobs to be distributed evenly among the printers on the network, and allows files to moved around, combined, and converted to different formats. Currently not available.
PC	Personal Computer
PGS	Pages. A page is the total scanned surface of the original. Duplex pages count as two pages, and A3 simplex count as two pages if the A3/DLT counter SP is switched ON.
PJob	Print Jobs

ABBREVIATION	WHAT IT MEANS
Ppr	Paper
PrtJam	Printer (plotter) Jam
PrtPGS	Print Pages
R	Red (Toner Remaining). Applies to the wide format model A2 only. This machine is under development and currently not available.
Rez	Resolution
SC	Service Code (Error SC code displayed)
Scn	Scan
Sim, Simplex	Simplex, printing on 1 side.
S-to-Email	Scan-to-E-mail
SMC	SMC report printed with SP5990. All of the Group 8 counters are recorded in the SMC report.
Svr	Server
TonEnd	Toner End
TonSave	Toner Save
TXJob	Send, Transmission
YMC	Yellow, Magenta, Cyan
YMCK	Yellow, Magenta, Cyan, Black

NOTE: All of the Group 8 SPs are reset with SP5 801 1 Memory All Clear, or the Counter Reset SP7 808.

8001	T:Total Jobs	These SPs count the number of times each application is used to do a job. [0~9999999/ 0 / 1] Note: The L: counter is the total number of times the other applications are used to send a job to the document server, plus the number of times a file already on the document server is used.
8002	C:Total Jobs	
8003	F:Total Jobs	
8004	P:Total Jobs	
8005	S:Total Jobs	
8006	L:Total Jobs	

- These SPs reveal the number of times an application is used, not the number of pages processed.
- When an application is opened for image input or output, this counts as one job.
- Interrupted jobs (paper jams, etc.) are counted, even though they do not finish.
- Only jobs executed by the customer are counted. Jobs executed by the customer engineer using the SP modes are not counted.
- When using secure printing (when a password is required to start the print job), the job is counted at the time when either "Delete Data" or "Specify Output" is specified.
- A job is counted as a fax job when the job is stored for sending.
- When a fax is received to fax memory, the F: counter increments but the L: counter does not (the document server is not used).
- A fax broadcast counts as one job for the F: counter (the fax destinations in the broadcast are not counted separately).
- A fax broadcast is counted only after all the faxes have been sent to their destinations. If one transmission generates an error, then the broadcast will not be counted until the transmission has been completed.
- A printed fax report counts as one job for the F: counter.
- The F: counter does not distinguish between fax sending or receiving.
- When a copy job on the document server is printed, SP8022 also increments, and when a print job stored on the document server is printed, SP8024 also increments.
- When an original is both copied and stored on the document server, the C: and L: counters both increment.
- When a print job is stored on the document server, only the L: counter increments.
- When the user presses the Document Server button to store the job on the document server, only the L: counter increments.
- When the user enters document server mode and prints data stored on the document server, only the L: counter increments.
- When an image received from Palm 2 is received and stored, the L: counter increments.
- When the customer prints a report (user code list, for example), the O: counter increments. However, for fax reports and reports executed from the fax application, the F: counter increments.

8011	T:Jobs/LS	These SPs count the number of jobs stored to the document server by each application, to reveal how local storage is being used for input. [0~9999999/ 0 / 1] The L: counter counts the number of jobs stored from within the document server mode screen at the operation panel.
8012	C:Jobs/LS	
8013	F:Jobs/LS	
8014	P:Jobs/LS	
8015	S:Jobs/LS	
8016	L:Jobs/LS	
8017	O:Jobs/LS	

- When a scan job is sent to the document server, the S: counter increments.
When you enter document server mode and then scan an original, the L: counter increments.
- When a print job is sent to the document server, the P: counter increments.
- When a network application sends data to the document server, the O: counter increments.
- When an image from Palm 2 is stored on the document server, the O: counter increments.
- When a fax is sent to the document server, the F: counter increments.

8021	T:Pjob/LS	These SPs reveal how files printed from the document server were stored on the document server originally. [0~9999999/ 0 / 1] The L: counter counts the number of jobs stored from within the document server mode screen at the operation panel.
8022	C:Pjob/LS	
8023	F:Pjob/LS	
8024	P:Pjob/LS	
8025	S:Pjob/LS	
8026	L:Pjob/LS	
8027	O:Pjob/LS	

- When a copy job stored on the document server is printed with another application, the C: counter increments.
- When an application like DeskTopBinder merges a copy job that was stored on the document server with a print job that was stored on the document server, the C: and P: counters both increment.
- When a job already on the document server is printed with another application, the L: counter increments.
- When a scanner job stored on the document server is printed with another application, the S: counter increments. If the original was scanned from within document server mode, then the L: counter increments.
- When images stored on the document server by a network application (including Palm 2), are printed with another application, the O: counter increments.
- When a copy job stored on the document server is printed with a network application (Web Image Monitor, for example), the C: counter increments.
- When a fax on the document server is printed, the F: counter increments.

8031	T:Pjob/DesApl	These SPs reveal what applications were used to output documents from the document server. [0~9999999/ 0 / 1] The L: counter counts the number of jobs printed from within the document server mode screen at the operation panel.
8032	C:Pjob/DesApl	
8033	F:Pjob/DesApl	
8034	P:Pjob/DesApl	
8035	S:Pjob/DesApl	
8036	L:Pjob/DesApl	
8037	O:Pjob/DesApl	

- When documents already stored on the document server are printed, the count for the application that started the print job is incremented.
- When the print job is started from a network application (Desk Top Binder, Web Image Monitor, etc.) the L: counter increments.

8041	T:TX Jobs/LS	These SPs count the applications that stored files on the document server that were later accessed for transmission over the telephone line or over a network (attached to an e-mail, or as a fax image by I-Fax). [0~9999999/ 0 / 1] Note: Jobs merged for sending are counted separately. The L: counter counts the number of jobs scanned from within the document server mode screen at the operation panel.
8042	C:TX Jobs/LS	
8043	F:TX Jobs/LS	
8044	P:TX Jobs/LS	
8045	S:TX Jobs/LS	
8046	L:TX Jobs/LS	
8047	O:TX Jobs/LS	

- When a stored copy job is sent from the document server, the C: counter increments.
- When images stored on the document server by a network application or Palm2 are sent as an e-mail, the O: counter increments.

8051	T:TX Jobs/DesApl	These SPs count the applications used to send files from the document server over the telephone line or over a network (attached to an e-mail, or as a fax image by I-Fax). Jobs merged for sending are counted separately. [0~9999999/ 0 / 1] The L: counter counts the number of jobs sent from within the document server mode screen at the operation panel.
8052	C:TX Jobs/DesApl	
8053	F:TX Jobs/DesApl	
8054	P:TX Jobs/DesApl	
8055	S:TX Jobs/DesApl	
8056	L:TX Jobs/DesApl	
8057	O:TX Jobs/DesApl	

- If the send is started from Desk Top Binder or Web Image Monitor, for example, then the O: counter increments.

8061	T:FIN Jobs [0~9999999/ 0 / 1]	
	These SPs total the finishing methods. The finishing method is specified by the application.	
8062	C:FIN Jobs [0~9999999/ 0 / 1]	
	These SPs total finishing methods for copy jobs only. The finishing method is specified by the application.	
8063	F:FIN Jobs [0~9999999/ 0 / 1]	
	These SPs total finishing methods for fax jobs only. The finishing method is specified by the application. Note: Finishing features for fax jobs are not available at this time.	
8064	P:FIN Jobs [0~9999999/ 0 / 1]	
	These SPs total finishing methods for print jobs only. The finishing method is specified by the application.	
8065	S:FIN Jobs [0~9999999/ 0 / 1]	
	These SPs total finishing methods for scan jobs only. The finishing method is specified by the application. Note: Finishing features for scan jobs are not available at this time.	
8066	L:FIN Jobs [0~9999999/ 0 / 1]	
	These SPs total finishing methods for jobs output from within the document server mode screen at the operation panel. The finishing method is specified from the print window within document server mode.	
8067	O:FIN Jobs [0~9999999/ 0 / 1]	
	These SPs total finishing methods for jobs executed by an external application, over the network. The finishing method is specified by the application.	
806x 1	Sort	Number of jobs started in Sort mode. When a stored copy job is set for Sort and then stored on the document server, the L: counter increments. (See SP8066 1)
806x 2	Stack	Number of jobs started out of Sort mode.
806x 3	Staple	Number of jobs started in Staple mode.
806x 4	Booklet	Number of jobs started in Booklet mode. If the machine is in staple mode, the Staple counter also increments.
806x 5	Z-Fold	Number of jobs started In any mode other than the Booklet mode and set for folding (Z-fold).
806x 6	Punch	Number of jobs started in Punch mode. When Punch is set for a print job, the P: counter increments. (See SP8064 6.)
806x 7	Other	Reserved. Not used.

8071	T:Jobs/PGS		[0~9999999/ 0 / 1]
	These SPs count the number of jobs broken down by the number of pages in the job, regardless of which application was used.		
8072	C:Jobs/PGS		[0~9999999/ 0 / 1]
	These SPs count and calculate the number of copy jobs by size based on the number of pages in the job.		
8073	F:Jobs/PGS		[0~9999999/ 0 / 1]
	These SPs count and calculate the number of fax jobs by size based on the number of pages in the job.		
8074	P:Jobs/PGS		[0~9999999/ 0 / 1]
	These SPs count and calculate the number of print jobs by size based on the number of pages in the job.		
8075	S:Jobs/PGS		[0~9999999/ 0 / 1]
	These SPs count and calculate the number of scan jobs by size based on the number of pages in the job.		
8076	L:Jobs/PGS		[0~9999999/ 0 / 1]
	These SPs count and calculate the number of jobs printed from within the document server mode window at the operation panel, by the number of pages in the job.		
8077	O:Jobs/PGS		[0~9999999/ 0 / 1]
	These SPs count and calculate the number of “Other” application jobs (Web Image Monitor, Palm 2, etc.) by size based on the number of pages in the job.		
807x 1	1 Page	807x 8	21~50 Pages
807x 2	2 Pages	807x 9	51~100 Pages
807x 3	3 Pages	807x 10	101~300 Pages
807x 4	4 Pages	807x 11	301~500 Pages
807x 5	5 Pages	807x 12	501~700 Pages
807x 6	6~10 Pages	807x 13	701~1000 Pages
807x 7	11~20 Pages	807x 14	1001~ Pages


- For example: When a copy job stored on the document server is printed in document server mode, the appropriate L: counter (SP8076 0xx) increments.
- Printing a fax report counts as a job and increments the F: counter (SP 8073).
- Interrupted jobs (paper jam, etc.) are counted, even though they do not finish.
- If a job is paused and re-started, it counts as one job.
- If the finisher runs out of staples during a print and staple job, then the job is counted at the time the error occurs.
- For copy jobs (SP 8072) and scan jobs (SP 8075), the total is calculated by multiplying the number of sets of copies by the number of pages scanned. (One duplex page counts as 2.)
- The first test print and subsequent test prints to adjust settings are added to the number of pages of the copy job (SP 8072).
- When printing the first page of a job from within the document server screen, the page is counted.

8111	T:FAX TX Jobs	[0~99999999/ 0 / 1]
	These SPs count the total number of jobs (color or black-and-white) sent by fax, either directly or using a file stored on the document server, on a telephone line. Note: Color fax sending is not available at this time.	
8113	F:FAX TX Jobs	[0~99999999/ 0 / 1]
	These SPs count the total number of jobs (color or black-and-white) sent by fax directly on a telephone line. Note: Color fax sending is not available at this time.	

- These counters count jobs, not pages.
- This SP counts fax jobs sent over a telephone line with a fax application, including documents stored on the document server.
- If the mode is changed during the job, the job will count with the mode set when the job started.
- If the same document is faxed to both a public fax line and an I-Fax at a destination where both are available, then this counter increments, and the I-Fax counter (812x) also increments.
- The fax job is counted when the job is scanned for sending, not when the job is sent.


8121	T:IFAX TX Jobs	[0~99999999/ 0 / 1]
	These SPs count the total number of jobs (color or black-and-white) sent, either directly or using a file stored on the document server, as fax images using I-Fax. Note: Color fax sending is not available at this time.	
8123	F:IFAX TX Jobs	[0~99999999/ 0 / 1]
	These SPs count the number of jobs (color or black-and-white) sent (not stored on the document server), as fax images using I-Fax. Note: Color fax sending is not available at this time.	

- These counters count jobs, not pages.
- The counters for color are provided for future use; the color fax feature is not available at this time.
- The fax job is counted when the job is scanned for sending, not when the job is sent.



8131	T:S-to-Email Jobs	[0~99999999/ 0 / 1]
	These SPs count the total number of jobs scanned and attached to an e-mail, regardless of whether the document server was used or not.	
8135	S:S-to-Email Jobs	
	These SPs count the number of jobs scanned and attached to an e-mail, without storing the original on the document server.	
8136	L:S-to-Email Jobs	
	These SPs count the number of jobs using a file stored on stored on the document server, and attaching it to an e-mail.	

- These counters count jobs, not pages.
- If the job is stored on the document server, after the job is stored it is determined to be color or black-and-white then counted.
- If the job is cancelled during scanning, or if the job is cancelled while the document is waiting to be sent, the job is not counted.
- If the job is cancelled during sending, it may or may not be counted, depending on what stage of the process had been reached when the job was cancelled.
- If several jobs are combined for sending to the Scan Router, Scan-to-Email, or Scan-to-PC, or if one job is sent to more than one destination. each send is counted separately. For example, if the same document is sent by Scan-to-Email as well as Scan-to-PC, then it is counted twice (once for Scan-to-Email and once for Scan-to-PC).



8141	T:Deliv Jobs/Svr	[0~99999999/ 0 / 1]
	These SPs count the total number of jobs scanned and sent to a Scan Router server.	
8143	F:Deliv Jobs/Svr	
	These SPs count the number of jobs scanned in fax mode and sent to a Scan Router server.	
8145	S:Deliv Jobs/Svr	
	These SPs count the number of jobs scanned in scanner mode and sent to a Scan Router server.	

- These counters count jobs, not pages.
- The jobs are counted even though the arrival and reception of the jobs at the Scan Router server cannot be confirmed.
- If even one color image is mixed with black-and-white images, then the job is counted as a "Color" job.
- If the job is cancelled during scanning, or if the job is cancelled while the document is waiting to be delivered, the job is not counted.
- If the job is cancelled during sending, it may or may not be counted, depending on what stage of the process had been reached when the job was cancelled.
- Even if several files are combined for sending, the transmission counts as one job.

8151	T:Deliv Jobs/PC	[0~99999999/ 0 / 1]
	These SPs count the total number of jobs scanned and sent to a folder on a PC (Scan-to-PC). Note: At the present time, 8151 and 8155 perform identical counts.	
8155	S:Deliv Jobs/PC	
	These SPs count the total number of jobs scanned and sent with Scan-to-PC.	

- These counters count jobs, not pages.
- If the job is cancelled during scanning, it is not counted.
- If the job is cancelled while it is waiting to be sent, the job is not counted.
- If the job is cancelled during sending, it may or may not be counted, depending on what stage of the process had been reached when the job was cancelled.
- Even if several files are combined for sending, the transmission counts as one job.

8161	T:PCFAX TX Jobs	These SPs count the number of PC Fax transmission jobs. A job is counted from when it is registered for sending, not when it is sent. [0~99999999/ 0 / 1] Note: At the present time, these counters perform identical counts.
8163	F:PCFAX TX Jobs	

- This counts fax jobs started from a PC using a PC fax application, and sending the data out to the destination from the PC through the copier.

8191	T:Total Scan PGS	These SPs count the pages scanned by each application that uses the scanner to scan images. [0~9999999/ 0 / 1]
8192	C:Total Scan PGS	
8193	F:Total Scan PGS	
8195	S:Total Scan PGS	
8196	L:Total Scan PGS	

- SP 8191 to 8196 count the number of scanned sides of pages, not the number of physical pages.
- These counters do not count reading user stamp data, or reading color charts to adjust color.
- Previews done with a scanner driver are not counted.
- A count is done only after all images of a job have been scanned.
- Scans made in SP mode are not counted.

Examples:

- If 3 B5 pages and 1 A3 page are scanned with the scanner application but not stored, the S: count is 4.
- If both sides of 3 A4 sheets are copied and stored to the document server using the Store File button in the Copy mode window, the C: count is 6 and the L: count is 6.
- If both sides of 3 A4 sheets are copied but not stored, the C: count is 6.
- If you enter document server mode then scan 6 pages, the L: count is 6.

8201	T:LSize Scan PGS	[0~9999999/ 0 / 1]
	These SPs count the total number of large pages input with the scanner for scan and copy jobs. Large size paper (A3/DLT) scanned for fax transmission are not counted. Note: These counters are displayed in the SMC Report, and in the User Tools display.	
8205	S:LSize Scan PGS	[0~9999999/ 0 / 1]
	These SPs count the total number of large pages input with the scanner for scan jobs only. Large size paper (A3/DLT) scanned for fax transmission are not counted. Note: These counters are displayed in the SMC Report, and in the User Tools display..	

8211	T:Scan PGS/LS	These SPs count the number of pages scanned into the document server . [0~9999999/ 0 / 1] The L: counter counts the number of pages stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen
8212	C:Scan PGS/LS	
8213	F:Scan PGS/LS	
8215	S:Scan PGS/LS	
8216	L:Scan PGS/LS	

- Reading user stamp data is not counted.
- If a job is cancelled, the pages output as far as the cancellation are counted.
- If the scanner application scans and stores 3 B5 sheets and 1 A4 sheet, the S: count is 4.
- If pages are copied but not stored on the document server, these counters do not change.
- If both sides of 3 A4 sheets are copied and stored to the document server, the C: count is 6 and the L: count is 6.
- If you enter document server mode then scan 6 pages, the L: count is 6.

8221	ADF Org Feeds		[0~9999999/ 0 / 1]
	These SPs count the number of pages fed through the ADF for front and back side scanning.		
8221 1	Front	Number of front sides fed for scanning: With an ADF that can scan both sides simultaneously, the Front side count is the same as the number of pages fed for either simplex or duplex scanning. With an ADF that cannot scan both sides simultaneously, the Front side count is the same as the number of pages fed for duplex front side scanning. (The front side is determined by which side the user loads face up.)	
8221 2	Back	Number of rear sides fed for scanning: With an ADF that can scan both sides simultaneously, the Back count is the same as the number of pages fed for duplex scanning. With an ADF that cannot scan both sides simultaneously, the Back count is the same as the number of pages fed for duplex rear-side scanning.	

- When 1 sheet is fed for duplex scanning the Front count is 1 and the Back count is 1.
- If a jam occurs during the job, recovery processing is not counted to avoid double counting. Also, the pages are not counted if the jam occurs before the first sheet is output.

8231	Scan PGS/Mode		[0~99999999/ 0 / 1]
	These SPs count the number of pages scanned by each ADF mode to determine the work load on the ADF.		
8231 1	Large Volume	Selectable. Large copy jobs that cannot be loaded in the ADF at one time.	
8231 2	SADF	Selectable. Feeding pages one by one through the ADF.	
8231 3	Mixed Size	Selectable. Select "Mixed Sizes" on the operation panel.	
8231 4	Custom Size	Selectable. Originals of non-standard size.	
8231 5	Platen	Book mode. Raising the ADF and placing the original directly on the platen.	

- If the scan mode is changed during the job, for example, if the user switches from ADF to Platen mode, the count is done for the last selected mode.
- The user cannot select mixed sizes or non-standard sizes with the fax application so if the original's page sizes are mixed or non-standard, these are not counted.
- If the user selects "Mixed Sizes" for copying in the platen mode, the Mixed Size count is enabled.
- In the SADF mode if the user copies 1 page in platen mode and then copies 2 pages with SADF, the Platen count is 1 and the SADF count is 3.

8241	T:Scan PGS/Org	[0~9999999/ 0 / 1]				
	These SPs count the total number of scanned pages by original type for all jobs, regardless of which application was used.					
8242	C:Scan PGS/Org	[0~9999999/ 0 / 1]				
	These SPs count the number of pages scanned by original type for Copy jobs.					
8243	F:Scan PGS/Org	[0~9999999/ 0 / 1]				
	These SPs count the number of pages scanned by original type for Fax jobs.					
8245	S:Scan PGS/Org	[0~9999999/ 0 / 1]				
	These SPs count the number of pages scanned by original type for Scan jobs.					
8246	L:Scan PGS/Org	[0~9999999/ 0 / 1]				
	These SPs count the number of pages scanned and stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen					
		8241	8242	8243	8245	8246
824x 1: Text		Yes	Yes	Yes	Yes	Yes
824x 2: Text/Photo		Yes	Yes	Yes	Yes	Yes
824x 3: Photo		Yes	Yes	Yes	Yes	Yes
824x 4: GenCopy, Pale		Yes	Yes	No	Yes	Yes
824x 5: Map		Yes	Yes	No	Yes	Yes
824x 6: Normal/Detail		Yes	No	Yes	No	No
824x 7: Fine/Super Fine		Yes	No	Yes	No	No
824x 8: Binary		Yes	No	No	Yes	No
824x 9: Grayscale		Yes	No	No	Yes	No

- If the scan mode is changed during the job, for example, if the user switches from ADF to Platen mode, the count is done for the last selected mode.

8251	T:Scan PGS/ImgEdt	<p>These SPs show how many times Image Edit features have been selected at the operation panel for each application. Some examples of these editing features are:</p> <ul style="list-style-type: none"> • Erase> Border • Erase> Center • Image Repeat • Centering • Positive/Negative <p>[0~9999999/ 0 / 1]</p> <p>Note: The count totals the number of times the edit features have been used. A detailed breakdown of exactly which features have been used is not given.</p>
8252	C:Scan PGS/ImgEdt	
8254	P:Scan PGS/ImgEdt	
8256	L:Scan PGS/ImgEdt	
8257	O:Scan PGS/ImgEdt	

The L: counter counts the number of pages stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen.

8281	T:Scan PGS/TWAIN	<p>These SPs count the number of pages scanned using a TWAIN driver. These counters reveal how the TWAIN driver is used for delivery functions.</p> <p>[0~9999999/ 0 / 1]</p> <p>Note: At the present time, these counters perform identical counts.</p>
8285	S:Scan PGS/TWAIN	

8291	T:Scan PGS/Stamp	<p>These SPs count the number of pages stamped with the stamp in the ADF unit.</p> <p>[0~9999999/ 0 / 1]</p> <p>The L: counter counts the number of pages stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen</p>
8293	F:Scan PGS/Stamp	
8295	S:Scan PGS/Stamp	
8296	L:Scan PGS/Stamp	

8301	T:Scan PGS/Size	[0~9999999/ 0 / 1]
	These SPs count by size the total number of pages scanned by all applications. Use these totals to compare original page size (scanning) and output (printing) page size [SP 8-441].	
8302	C:Scan PGS/Size	[0~9999999/ 0 / 1]
	These SPs count by size the total number of pages scanned by the Copy application. Use these totals to compare original page size (scanning) and output (printing) page size [SP 8-442].	
8303	F:Scan PGS/Size	[0~9999999/ 0 / 1]
	These SPs count by size the total number of pages scanned by the Fax application. Use these totals to compare original page size (scanning) and output page size [SP 8-443].	
8305	S:Scan PGS/Size	[0~9999999/ 0 / 1]
	These SPs count by size the total number of pages scanned by the Scan application. Use these totals to compare original page size (scanning) and output page size [SP 8-445].	
8306	L:Scan PGS/Size	[0~9999999/ 0 / 1]
	These SPs count by size the total number of pages scanned and stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen. Use these totals to compare original page size (scanning) and output page size [SP 8-446].	
830x 1	A3	
830x 2	A4	
830x 3	A5	
830x 4	B4	
830x 5	B5	
830x 6	DLT	
830x 7	LG	
830x 8	LT	
830x 9	HLT	
830x 10	Full Bleed	
830x 254	Other (Standard)	
830x 255	Other (Custom)	

8311	T:Scan PGS/Rez	[0~9999999/ 0 / 1]
	These SPs count by resolution setting the total number of pages scanned by applications that can specify resolution settings.	
8315	S:Scan PGS/Rez	[0~9999999/ 0 / 1]
	These SPs count by resolution setting the total number of pages scanned by applications that can specify resolution settings. Note: At the present time, 8311 and 8315 perform identical counts.	
831x 1	1200dpi ~	
831x 2	600dpi~1199dpi	
831x 3	400dpi~599dpi	
831x 4	200dpi~399dpi	
831x 5	~199dpi	

- Copy resolution settings are fixed so they are not counted.
- The Fax application does not allow finely-adjusted resolution settings so no count is done for the Fax application.

8381	T:Total PrtPGS	These SPs count the number of pages printed by the customer. The counter for the application used for storing the pages increments. [0~9999999/ 0 / 1] The L: counter counts the number of pages stored from within the document server mode screen at the operation panel. Pages stored with the Store File button from within the Copy mode screen go to the C: counter.
8382	C:Total PrtPGS	
8383	F:Total PrtPGS	
8384	P:Total PrtPGS	
8385	S:Total PrtPGS	
8386	L:Total PrtPGS	
8387	O:Total PrtPGS	

- When the A3/DLT double count function is switched on with SP5104, 1 A3/DLT page is counted as 2.
- When several documents are merged for a print job, the number of pages stored are counted for the application that stored them.
- These counters are used primarily to calculate charges on use of the machine, so the following pages are not counted as printed pages:
 - Blank pages in a duplex printing job.
 - Blank pages inserted as document covers, chapter title sheets, and slip sheets.
 - Reports printed to confirm counts.
 - All reports done in the service mode (service summaries, engine maintenance reports, etc.)
 - Test prints for machine image adjustment.
 - Error notification reports.
 - Partially printed pages as the result of a copier jam.

8391	LSize PrtPGS	[0~9999999/ 0 / 1]
	These SPs count pages printed on paper sizes A3/DLT and larger. Note: In addition to being displayed in the SMC Report, these counters are also displayed in the User Tools display on the copy machine.	

8401	T:PrtPGS/LS	These SPs count the number of pages printed from the document server. The counter for the application used to print the pages is incremented. The L: counter counts the number of jobs stored from within the document server mode screen at the operation panel. [0~9999999/ 0 / 1]
8402	C:PrtPGS/LS	
8403	F:PrtPGS/LS	
8404	P:PrtPGS/LS	
8405	S:PrtPGS/LS	
8406	L:PrtPGS/LS	

- Print jobs done with Web Image Monitor and Desk Top Binder are added to the L: count.
- Fax jobs done with Web Image Monitor and Desk Top Binder are added to the F: count.

8411	Prints/Duplex	This SP counts the amount of paper (front/back counted as 1 page) used for duplex printing. Last pages printed only on one side are not counted. [0~9999999/ 0 / 1]
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8421	T:PrtPGS/Dup Comb	[0~9999999/ 0 / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing. This is the total for all applications.	
8422	C:PrtPGS/Dup Comb	[0~9999999/ 0 / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the copier application.	
8423	F:PrtPGS/Dup Comb	[0~9999999/ 0 / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the fax application.	
8424	P:PrtPGS/Dup Comb	[0~9999999/ 0 / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the printer application.	
8425	S:PrtPGS/Dup Comb	[0~9999999/ 0 / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the scanner application.	
8426	L:PrtPGS/Dup Comb	[0~9999999/ 0 / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing from within the document server mode window at the operation panel.	
8427	O:PrtPGS/Dup Comb	[0~9999999/ 0 / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by Other applications	
842x 1	Simplex> Duplex	
842x 2	Duplex> Duplex	
842x 3	Book> Duplex	
842x 4	Simplex Combine	
842x 5	Duplex Combine	
842x 6	2>	2 pages on 1 side (2-Up)
842x 7	4>	4 pages on 1 side (4-Up)
842x 8	6>	6 pages on 1 side (6-Up)
842x 9	8>	8 pages on 1 side (8-Up)
842x 10	9>	9 pages on 1 side (9-Up)
842x 11	16>	16 pages on 1 side (16-Up)
842x 12	Booklet	
842x 13	Magazine	

- These counts (SP8421 to SP8427) are especially useful for customers who need to improve their compliance with ISO standards for the reduction of paper consumption.
- Pages that are only partially printed with the n-Up functions are counted as 1 page.

- Here is a summary of how the counters work for Booklet and Magazine modes:

Booklet	
Original Pages	Count
1	1
2	2
3	2
4	2
5	3
6	4
7	4
8	4

Magazine	
Original Pages	Count
1	1
2	2
3	2
4	2
5	4
6	4
7	4
8	4

8431	T:PrtPGS/ImgEdt [0~99999999/ 0 / 1]	
	These SPs count the total number of pages output with the three features below, regardless of which application was used.	
8432	C:PrtPGS/ImgEdt [0~99999999/ 0 / 1]	
	These SPs count the total number of pages output with the three features below with the copy application.	
8434	P:PrtPGS/ImgEdt [0~99999999/ 0 / 1]	
	These SPs count the total number of pages output with the three features below with the print application.	
8436	L:PrtPGS/ImgEdt [0~99999999/ 0 / 1]	
	These SPs count the total number of pages output from within the document server mode window at the operation panel with the three features below.	
8437	O:PrtPGS/ImgEdt [0~99999999/ 0 / 1]	
	These SPs count the total number of pages output with the three features below with Other applications.	
843x 1	Cover/Slip Sheet	Total number of covers or slip sheets inserted. The count for a cover printed on both sides counts 2.
843x 2	Series/Book	The number of pages printed in series (one side) or printed as a book with booklet right/left pagination.
843x 3	User Stamp	The number of pages printed where stamps were applied, including page numbering and date stamping.

8441	T:PrtPGS/Ppr Size [0~9999999/ 0 / 1]	
	These SPs count by print paper size the number of pages printed by all applications.	
8442	C:PrtPGS/Ppr Size [0~9999999/ 0 / 1]	
	These SPs count by print paper size the number of pages printed by the copy application.	
8443	F:PrtPGS/Ppr Size [0~9999999/ 0 / 1]	
	These SPs count by print paper size the number of pages printed by the fax application.	
8444	P:PrtPGS/Ppr Size [0~9999999/ 0 / 1]	
	These SPs count by print paper size the number of pages printed by the printer application.	
8445	S:PrtPGS/Ppr Size [0~9999999/ 0 / 1]	
	These SPs count by print paper size the number of pages printed by the scanner application.	
8446	L:PrtPGS/Ppr Size [0~9999999/ 0 / 1]	
	These SPs count by print paper size the number of pages printed from within the document server mode window at the operation panel.	
8447	O:PrtPGS/Ppr Size [0~9999999/ 0 / 1]	
	These SPs count by print paper size the number of pages printed by Other applications.	
844x 1	A3	
844x 2	A4	
844x 3	A5	
844x 4	B4	
844x 5	B5	
844x 6	DLT	
844x 7	LG	
844x 8	LT	
844x 9	HLT	
844x 10	Full Bleed	
844x 254	Other (Standard)	
844x 255	Other (Custom)	

- These counters do not distinguish between LEF and SEF.

8451	PrtPGS/Ppr Tray	[0~9999999/ 0 / 1]
	These SPs count the number of sheets fed from each paper feed station.	
8451 1	Bypass	Bypass Tray
8451 2	Tray 1	Copier
8451 3	Tray 2	Copier
8451 4	Tray 3	Paper Tray Unit (Option)
8451 5	Tray 4	Paper Tray Unit (Option)
8451 6	Tray 5	LCT (Option)
8451 7	Tray 6	Currently not used.
8451 8	Tray 7	Currently not used.
8451 9	Tray 8	Currently not used.
8451 10	Tray 9	Currently not used.

8461	T:PrtPGS/Ppr Type	[0~9999999/ 0 / 1]
	These SPs count by paper type the number pages printed by all applications. <ul style="list-style-type: none"> • These counters are not the same as the PM counter. The PM counter is based on feed timing to accurately measure the service life of the feed rollers. However, these counts are based on output timing. • Blank sheets (covers, chapter covers, slip sheets) are also counted. • During duplex printing, pages printed on both sides count as 1, and a page printed on one side counts as 1. 	
8462	C:PrtPGS/Ppr Type	[0~9999999/ 0 / 1]
	These SPs count by paper type the number pages printed by the copy application.	
8463	F:PrtPGS/Ppr Type	[0~9999999/ 0 / 1]
	These SPs count by paper type the number pages printed by the fax application.	
8464	P:PrtPGS/Ppr Type	[0~9999999/ 0 / 1]
	These SPs count by paper type the number pages printed by the printer application.	
8466	L:PrtPGS/Ppr Type	[0~9999999/ 0 / 1]
	These SPs count by paper type the number pages printed from within the document server mode window at the operation panel.	
846x 1	Normal	
846x 2	Recycled	
846x 3	Special	
846x 4	Thick	
846x 5	Normal (Back)	
846x 6	Thick (Back)	
846x 7	OHP	
846x 8	Other	

8471	PrtPGS/Mag	[0~9999999/ 0 / 1]
	These SPs count by magnification rate the number of pages printed.	
8471 1	~49%	
8471 2	50%~99%	
8471 3	100%	
8471 4	101%~200%	
8471 5	201% ~	

- Counts are done for magnification adjusted for pages, not only on the operation panel but performed remotely with an external network application capable of performing magnification adjustment as well.
- Magnification adjustments done with printer drivers with PC applications such as Excel are also counted.
- Magnification adjustments done for adjustments after they have been stored on the document server are not counted.
- Magnification adjustments performed automatically during Auto Reduce/Enlarge copying are counted.
- The magnification rates of blank cover sheets, slip sheets, etc. are automatically assigned a rate of 100%.

8481	T:PrtPGS/TonSave
8484	P:PrtPGS/TonSave
	These SPs count the number of pages printed with the Toner Save feature switched on.
	Note: These SPs return the same results as this SP is limited to the Print application.
	[0~99999999/ 0 / 1]

8511	T:PrtPGS/Emul [0~99999999/ 0 / 1]	
	These SPs count by printer emulation mode the total number of pages printed.	
8514	P:PrtPGS/Emul [0~99999999/ 0 / 1]	
	These SPs count by printer emulation mode the total number of pages printed.	
8514 1	RPCS	
8514 2	RPDL	
8514 3	PS3	
8514 4	R98	
8514 5	R16	
8514 6	GL/GL2	
8514 7	R55	
8514 8	RTIFF	
8514 9	PDF	
8514 10	PCL5e/5c	
8514 11	PCL XL	
8514 12	IPDL-C	
8514 13	BM-Links	Japan Only
8514 14	Other	

- SP8511 and SP8514 return the same results as they are both limited to the Print application.
- Print jobs output to the document server are not counted.

8521	T:PrtPGS/FIN	[0~9999999/ 0 / 1]
	These SPs count by finishing mode the total number of pages printed by all applications.	
8522	C:PrtPGS/FIN	[0~9999999/ 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Copy application.	
8523	F:PrtPGS/FIN	[0~9999999/ 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Fax application. Note: <ul style="list-style-type: none"> Print finishing options for received faxes are currently not available. 	
8524	P:PrtPGS/FIN	[0~9999999/ 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Print application.	
8525	S:PrtPGS/FIN	[0~9999999/ 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Scanner application.	
8526	L:PrtPGS/FIN	[0~9999999/ 0 / 1]
	These SPs count by finishing mode the total number of pages printed from within the document server mode window at the operation panel.	
852x 1	Sort	
852x 2	Stack	
852x 3	Staple	
852x 4	Booklet	
852x 5	Z-Fold	
852x 6	Punch	
852x 7	Other	

NOTE: 1) If stapling is selected for finishing and the stack is too large for stapling, the unstapled pages are still counted.
 2) The counts for staple finishing are based on output to the staple tray, so jam recoveries are counted.

8531	Staples	This SP counts the amount of staples used by the machine. [0~9999999/ 0 / 1]
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8581	T:Counter	[0~9999999/ 0 / 1]
	These SPs count the total output broken down by color output, regardless of the application used. In addition to being displayed in the SMC Report, these counters are also displayed in the User Tools display on the copy machine. Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

8591	O:Counter	[0~9999999/ 0 / 1]
	These SPs count the totals for A3/DLT paper use, number of duplex pages printed, and the number of staples used. These totals are for Other (O:) applications only.	
8591 1	A3/DLT	
8591 2	Duplex	
8591 3	Staple	

8631	T:FAX TX PGS	[0~9999999/ 0 / 1]
	These SPs count by color mode the number of pages sent by fax to a telephone number. Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	
8633	F:FAX TX PGS	[0~9999999/ 0 / 1]
	These SPs count by color mode the number of pages sent by fax to a telephone number. Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

- If a document has color and black-and-white pages mixed, the pages are counted separately as B/W or Color.
- At the present time, this feature is provided for the Fax application only so SP8631 and SP8633 are the same.
- The counts include error pages.
- If a document is sent to more than one destination with a Group transmission, the count is done for each destination.
- Polling transmissions are counted but polling RX are not.
- Relay, memory, and confidential mailbox transmissions and are counted for each destination.

8641	T:FAX TX PGS	[0~9999999/ 0 / 1]
	These SPs count by color mode the number of pages sent by fax to as fax images using I-Fax. Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	
8643	F:FAX TX PGS	[0~9999999/ 0 / 1]
	These SPs count by color mode the number of pages sent by Fax as fax images using I-Fax. Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

- If a document has color and black-and-white pages mixed, the pages are counted separately as B/W or Color.
- At the present time, this feature is provided for the Fax application only so SP8641 and SP8643 are the same.
- The counts include error pages.
- If a document is sent to more than one destination with a Group transmission, the count is done for each destination.
- Polling transmissions are counted but polling RX are not.
- Relay, memory, and confidential mailbox transmissions and are counted for each destination.

8651	T:S-to-Email PGS	[0~9999999/ 0 / 1]
	These SPs count by color mode the total number of pages attached to an e-mail for both the Scan and document server applications. Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	
8655	S:S-to-Email PGS	[0~9999999/ 0 / 1]
	These SPs count by color mode the total number of pages attached to an e-mail for the Scan application only. Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

- NOTE:** 1) The count for B/W and Color pages is done after the document is stored on the HDD. If the job is cancelled before it is stored, the pages are not counted.
- 2) If Scan-to-Email is used to send a 10-page document to 5 addresses, the count is 10 (the pages are sent to the same SMTP server together).
- 3) If Scan-to-PC is used to send a 10-page document to 5 folders, the count is 50 (the document is sent to each destination of the SMB/FTP server).
- 4) Due to restrictions on some devices, if Scan-to-Email is used to send a 10-page document to a large number of destinations, the count may be divided and counted separately. For example, if a 10-page document is sent to 200 addresses, the count is 10 for the first 100 destinations and the count is also 10 for the second 100 destinations, for a total of 20.).

8661	T:Deliv PGS/Svr	[0~99999999/ 0 / 1]
	These SPs count by color mode the total number of pages sent to a Scan Router server by both Scan and LS applications. Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	
8665	S:Deliv PGS/Svr	[0~99999999/ 0 / 1]
	These SPs count by color mode the total number of pages sent to a Scan Router server by the Scan application. Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

- NOTE:** 1) The B/W and Color counts are done after the document is stored on the HDD of the Scan Router server.
- 2) If the job is canceled before storage on the Scan Router server finishes, the counts are not done.
- 3) The count is executed even if regardless of confirmation of the arrival at the Scan Router server.

8671	T:Deliv PGS/PC	[0~9999999/ 0 / 1]
	These SPs count by color mode the total number of pages sent to a folder on a PC (Scan-to-PC) with the Scan and LS applications. Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	
8675	S:Deliv PGS/PC	[0~9999999/ 0 / 1]
	These SPs count by color mode the total number of pages sent with Scan-to-PC with the Scan application. Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

8681	T:PCFAX TXPGS	These SPs count the number of pages sent by PC Fax. These SPs are provided for the Fax application only, so the counts for SP8681 and SP8683 are the same. [0~9999999/ 0 / 1]
8683	F:PCFAX TXPGS	

- This counts pages sent from a PC using a PC fax application, from the PC through the copier to the destination.
- When sending the same message to more than one place using broadcasting, the pages are only counted once. (For example, a 10-page fax is sent to location A and location B. The counter goes up by 10, not 20.)

8691	T:TX PGS/LS	These SPs count the number of pages sent from the document server. The counter for the application that was used to store the pages is incremented. [0~9999999/ 0 / 1] The L: counter counts the number of pages stored from within the document server mode screen at the operation panel. Pages stored with the Store File button from within the Copy mode screen go to the C: counter.
8692	C:TX PGS/LS	
8693	F:TX PGS/LS	
8694	P:TX PGS/LS	
8695	S:TX PGS/LS	
8696	L:TX PGS/LS	

- NOTE:**
- 1) Print jobs done with Web Image Monitor and Desk Top Binder are added to the count.
 - 2) If several documents are merged for sending, the number of pages stored are counted for the application that stored them.
 - 3) When several documents are sent by a Fax broadcast, the F: count is done for the number of pages sent to each destination.

8701	TX PGS/Port [0~9999999/ 0 / 1]	
	These SPs count the number of pages sent by the physical port used to send them. For example, if a 3-page original is sent to 4 destinations via ISDN G4, the count for ISDN (G3, G4) is 12.	
8701 1	PSTN-1	
8701 2	PSTN-2	
8701 3	PSTN-3	
8701 4	ISDN (G3,G4)	
8701 5	Network	

8711	T:Scan PGS/Comp [0~9999999/ 1]	
	These SPs count the number of compressed pages scanned into the document server, counted by the formats listed below.	
8711 1	JPEG/JPEG2000	
8711 2	TIFF (Multi/Single)	
8711 3	PDF	
8711 4	Other	

8 715	S:Scan PGS/Comp [0~9999999/ 1]	
	These SPs count the number of compressed pages scanned by the scan application, counted by the formats listed below.	
8715 1	JPEG/JPEG2000	
8715 2	TIFF (Multi/Single)	
8715 3	PDF	
8715 4	Other	

8741	RX PGS/Port [0~9999999/ 0 / 1]	
	These SPs count the number of pages received by the physical port used to receive them.	
8741 1	PSTN-1	
8741 2	PSTN-2	
8741 3	PSTN-3	
8741 4	ISDN (G3,G4)	
8741 5	Network	

8771	Dev Counter [0~9999999/ 0 / 1]	
	These SPs count the frequency of use (number of rotations of the development rollers) for black and other color toners. Note: For machines that do not support color, the Black toner count is the same as the Total count.	

8781	Pixel Coverage Ratio	
	This SP displays the number of toner bottles used. The count is done based on the equivalent of 1,000 pages per bottle.	

8791	LS Memory Remain	This SP displays the percent of space available on the document server for storing documents. [0~100/ 0 / 1]
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8801	Toner Remain	[0~100/ 0 / 1]
	This SP displays the percent of toner remaining for each color. This SP allows the user to check the toner supply at any time.	
	Note: <ul style="list-style-type: none"> • This precise method of measuring remaining toner supply (1% steps) is better than other machines in the market that can only measure in increments of 10 (10% steps). • This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only. 	

8831	Pixel Cover Ave.	Average Pixel Coverage
8831 1	Accum. Ave. K	
8831 2	Accum. Ave. M	Do not display for this machine.
8831 3	Accum. Ave. C	
8831 4	Accum. Ave. Y	

8841	Pixel Cover Last	Average Pixel Coverage
001	Last Page K	
002	Last Page M	Do not display for this machine.
003	Last Page C	
004	Last Page Y	

8851	Toner Coverage 0-10%		[0~9999999]
	These SPs count the percentage of dot coverage for black other color toners.		
8851 1	K	Black toner	
8851 2	M	Magenta toner	Do not display for this machine.
8851 3	C	Cyan toner	
8851 4	Y	Yellow toner	

8861	Toner Coverage 11-20%		[0~9999999]
	These SPs count the percentage of dot coverage for black other color toners.		
8861 1	K	Black toner	
8861 2	M	Magenta toner	Do not display for this machine.
8861 3	C	Cyan toner	
8861 4	Y	Yellow toner	

8871	Toner Coverage 21-30%		[0~9999999]
	These SPs count the percentage of dot coverage for black other color toners.		
8871 1	K	Black toner	Do not display for this machine.
8871 2	M	Magenta toner	
8871 3	C	Cyan toner	
8871 4	Y	Yellow toner	

8881	Toner Coverage 31 -%		[0~9999999]
	These SPs count the percentage of dot coverage for black other color toners.		
8881 1	K	Black toner	Do not display for this machine.
8881 2	M	Magenta toner	
8881 3	C	Cyan toner	
8881 4	Y	Yellow toner	

8901	Coverage Display (Toner Bottle: Previous) DFU		
8911	Coverage Display (Toner Bottle: Before Previous) DFU		

8941	Machine Status		[0~9999999/ 0 / 1]
	These SPs count the amount of time the machine spends in each operation mode. These SPs are useful for customers who need to investigate machine operation for improvement in their compliance with ISO Standards.		
8941 1	Operation Time	Engine operation time. Does not include time while controller is saving data to HDD (while engine is not operating).	
8941 2	Standby Time	Engine not operating. Includes time while controller saves data to HDD. Does not include time spent in Energy Save, Low Power, or Off modes.	
8941 3	Energy Save Time	Includes time while the machine is performing background printing.	
8941 4	Low Power Time	Includes time in Energy Save mode with Engine on. Includes time while machine is performing background printing.	
8941 5	Off Mode Time	Includes time while machine is performing background printing. Does not include time machine remains powered off with the power switches.	
8941 6	SC	Total down time due to SC errors.	
8941 7	PrtJam	Total down time due to paper jams during printing.	
8941 8	OrgJam	Total down time due to original jams during scanning.	
8941 9	Supply PM Wait End	Total down time due to toner end.	

8951	AddBook Register		
	These SPs count the number of events when the machine manages data registration.		
8951 1	User Code	User code registrations.	[0~9999999/ 0 / 1]
8951 2	Mail Address	Mail address registrations.	
8951 3	Fax Destination	Fax destination registrations.	
8951 4	Group	Group destination registrations.	
8951 5	Transfer Request	Fax relay destination registrations for relay TX.	
8951 6	F-Code	F-Code box registrations.	
8951 7	Copy Program	Copy application registrations with the Program (job settings) feature.	[0~255 / 0 / 255]
8951 8	Fax Program	Fax application registrations with the Program (job settings) feature.	
8951 9	Printer Program	Printer application registrations with the Program (job settings) feature.	
8951 10	Scanner Program	Scanner application registrations with the Program (job settings) feature.	



5.1.4 TEST PATTERN PRINTING (SP2902-3)

NOTE: Always print a test pattern to confirm correct operation of the machine.

1. Enter the SP mode and select SP2902 003.
2. Enter the number for the test pattern that you want to print and press $\text{\textcircled{\#}}$. (See the tables below.)
3. Press Copy Window to open the copy window and then select the settings for the test print (paper size, etc.)
4. Press Start $\text{\textcircled{D}}$ twice. (Ignore the "Place Original" messages) to start the test print.
5. Press SP Mode (highlighted) to return to the SP mode display.

No.	Test Pattern
0	None
1	Vertical Line (1dot)
2	Horizontal Line (1dot)
3	Vertical Line (2-dot)
4	Horizontal Line (2-dot)
5	Grid Pattern (1dot)
6	Independent (1-dot)
7	Independent (2-dot)
8	100% Black Coverage
9	Belt Pattern
10	Trimming Area
11	Argyle
12	Argyle (2-dot)
13	Checkered Flag
14	Horizontal Belt
15	Independent (4-dot)
16	Grayscale Horizontal
17	Grayscale Vertical
18	Grayscale Horizontal/Vertical
19	Grayscale Grid
20	Grayscale Horizontal White Stripe
21	Grayscale Vertical White Stripe
22	Grayscale Horizontal/Vertical White Stripe
23	100% White Coverage
24	Trimming Area (OR Outside Data)

NOTE: See SP 4417 in the SP table for a different set of test patterns.

5.1.5 INPUT CHECK

Main Machine Input Check (SP5803)

1. Enter the SP mode and select SP5803.
2. Enter the number (1 – 11) for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's.
The meaning of the display is as follows.

0 0 0 0 0 0 0

Bit 7 6 5 4 3 2 1 0

3. Check the status of each item against the corresponding bit numbers listed in the table below.

Number	Bit	Description	Reading	
			0	1
1	7	Paper Height Sensor 2 (2nd Tray)	Activated	Deactivated
	6	Paper Height Sensor 1 (2nd Tray)	Activated	Deactivated
	5	Paper Height Sensor 2 (1st Tray)	Activated	Deactivated
	4	Paper Height Sensor 1 (1st Tray)	Activated	Deactivated
	3	Paper End Sensor (2nd Tray)	Paper End	Paper is present
	2	Upper Relay Sensor	Activated	Deactivated
	1	Lower Right Cover Open	Closed	Open
	0	Not used		
2	7	Paper Exit Sensor	Activated	Deactivated
	6	Fusing Unit	Unit Set	Unit not set
	5	PCU Set	Activated	Deactivated
	4	New PCU Sensor	Activated	Deactivated
	3	Interchange Exit Sensor	Activated	Deactivated
	2	1 bin Tray Unit Set	Unit Set	Unit not set
	1	1 bin Tray Paper Sensor	Activated	Deactivated
	0	Interchange Unit Set	Unit Set	Unit not set
3	7	Bridge Exit Sensor	Activated	Deactivated
	6	Bridge Relay Sensor	Activated	Deactivated
	5	Bridge Paper Sensor	Activated	Deactivated
	4	Bridge Right Guide Switch	Activated	Deactivated
	3	Bridge Left Guide Switch	Activated	Deactivated
	2	Bridge Unit Set	Unit Set	Unit not set
	1	Bridge Fan Motor Lock	Locked	Unlocked
	0	Shift Tray Unit Set	Unit Set	Unit not set

Number	Bit	Description	Reading	
			0	1
4	7	Wake up Signal	Not detected	Detected
	6	Lower Relay Sensor	Activated	Deactivated
	5	Vertical Transport Sensor (Optional paper tray unit)	Activated	Deactivated
	4	3rd Tray Paper Size	Activated	Deactivated
	3	4th Tray Paper Size	Activated	Deactivated
	2	Motor Lock (Optional paper tray unit)	Not locked	Locked
	1	Height Sensor (Optional paper tray unit)	Activated	Deactivated
	0	Unit Set (Optional paper tray unit)	Unit set	Unit not set
5	7	Fusing Drive Release Solenoid	Activated	Deactivated
	6	Main Motor Brake Signal	Not active	Active
	5	Main Motor On Signal	Activated	Deactivated
	4	Main Motor Rotation Direction Signal	Not active	Active
	3	3rd Paper End Sensor	Paper End	Paper is present
	2	4th Paper End Sensor	Paper End	Paper is present
	1	3rd Paper Height Sensor	Deactivated	Activated
	0	4th Paper Height Sensor	Deactivated	Activated
6	7	Duplex Unit Set	Unit set	Unit not set
	6	Total Counter	Not detected	Detected
	5	By-pass Tray Unit Set	Detected	Not detected
	4	By-pass Paper End Sensor	Paper End	Paper is present
	3	By-pass Paper Size 2	Activated	Deactivated
	2	By-pass Paper Size 1	Activated	Deactivated
	1	By-pass Paper Size 4	Activated	Deactivated
	0	By-pass Paper Size 3	Activated	Deactivated
7	7	Not Used		
	6	Not Used		
	5	Not Used		
	4	Not Used		
	3	Key Counter Set	Detected	Not detected
	2	Key Card Set	Detected	Not detected
	1	Polygon Motor Ready Signal	Ready	Not ready
	0	Not Used		

Number	Bit	Description	Reading	
			0	1
8	7	Dip Switch - 4	On	Off
	6	Dip Switch - 3	Off	On
	5	Dip Switch - 2	Off	On
	4	Dip Switch - 1	Off	On
	3	Not Used		
	2	Front Safety Sw – 5V	On	Off
	1	Front Safety Sw – 24V	Off	On
	0	Main Motor Ready Signal	Ready	Not ready
9	7	Not used		
	6	Relay Off Signal	Not detected	Detected
	5	Toner Bottle Motor Lock	Locked	Not locked
	4	Right Cover Open	Closed	Open
	3	Registration Sensor	Activated	Deactivated
	2	Exhaust Fan Lock	Not locked	Locked
	1	Interchange Cover Open	Closed	Open
	0	Paper Overflow Sensor	Activated	Deactivated
10	7	Not Used		
	8	Not Used		
	5	Not Used		
	4	Upper Relay Sensor	Activated	Deactivated
	3	1st Paper End	Paper End	Paper is present
	2	2nd Paper Lift Sensor	Activated	Deactivated
	1	1st Paper Lift Sensor	Activated	Deactivated
	0	Not Used		
11	7	2nd Paper Size 1	Activated	Deactivated
	6	2nd Paper Size 2	Activated	Deactivated
	5	2nd Paper Size 3	Activated	Deactivated
	4	2nd Paper Size 4	Activated	Deactivated
	3	1st Paper Size 1	Activated	Deactivated
	2	1st Paper Size 2	Activated	Deactivated
	1	1st Paper Size 3	Activated	Deactivated
	0	1st Paper Size 4	Activated	Deactivated

NOTE: Numbers 12 to 14 are not used for this machine.

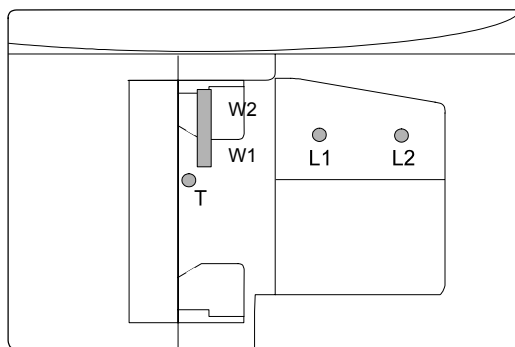
ARDF Input Check (SP6007)

1. Enter the SP mode and select SP6007.
2. Enter the number (1 – 11) for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's, as shown below. However, only bit 0 at the right side of the screen is valid.

0 0 0 0 0 0 0 0

Bit 7 6 5 4 3 2 1 0

3. Check the status of bit 0 for the required item listed in the table below.



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No..	Description	Reading	
		0	1
1	Original set sensor	Paper not detected	Paper detected
2	Original width sensor 1 (W1)	Paper not detected	Paper detected
3	Original width sensor 2 (W2)	Paper not detected	Paper detected
4	Original length sensor 1 (L1)	Paper not detected	Paper detected
5	Original length sensor 2 (L2)	Paper not detected	Paper detected
6	Original trailing edge sensor	Paper not detected	Paper detected
7	ADF cover sensor	Cover closed	Cover opened
8	DF position sensor	ADF closed	ADF opened
9	Registration sensor	Paper not detected	Paper detected
10	Exit sensor	Paper not detected	Paper detected
11	Inverter sensor	Paper not detected	Paper detected

Finisher Input Check (SP6117)

1. Enter the SP mode and select SP6117.
2. Enter the number (1 – 4) for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's.
The meaning of the display is as follows.

0 0 0 0 0 0 0

Bit 7 6 5 4 3 2 1 0

3. Check the status of each item against the corresponding bit numbers listed in the table below.

For 1000-sheet Finisher

Number	Bit	Description	Reading	
			0	1
Group 1	7	Stack Feed-out Belt HP Sensor	Activated	Deactivated
	6	Not Used		
	5	Jogger Fence HP Sensor	Activated	Deactivated
	4	Stapler HP Sensor	Activated	Deactivated
	3	Stapler Tray Entrance Sensor	Activated	Deactivated
	2	Not Used		
	1	Lower Tray Exit Sensor	Activated	Deactivated
	0	Entrance Sensor	Activated	Deactivated
Group 2	7	Not Used		
	6	Not Used		
	5	Stapler Ready Signal	Activated	Deactivated
	4	Not Used		
	3	Not Used		
	2	Staple Sensor	Activated	Deactivated
	1	Staple Hammer HP Sensor	Activated	Deactivated
	0	Stapler Tray Paper Sensor	Activated	Deactivated
Group 3 (Only 1000 Fin.)	7	Not Used		
	6	Lower Tray Lower Limit Sensor	Activated	Deactivated
	5	Not used		
	4	Stack Height Sensor	Activated	Deactivated
	3	Not Used		
	2	Not Used		
	1	Shift HP Sensor	Activated	Deactivated
	0	Exit Guide HP Sensor	Activated	Deactivated

Number	Bit	Description	Reading	
			0	1
Group 4 (Only 1000 Fin.)	7	Not Used		
	6	Not Used		
	5	Not Used		
	4	Not Used		
	3	Upper Tray Paper Limit Sensor	Activated	Deactivated
	2	Not Used		
	1	Not Used		
	0	Not Used		

For 500-sheet Finisher

Number	Bit	Description	Reading	
			0	1
1	7	Stack Near-limit Sensor	Activated	Deactivated
	6	Tray Upper Limit Sensor	Activated	Deactivated
	5	Lever Sensor	Activated	Deactivated
	4	Stack Height Sensor	Activated	Deactivated
	3	Top Cover Sensor	Closed	Opened
	2	Jogger HP Sensor	Activated	Deactivated
	1	Exit Sensor	Activated	Deactivated
	0	Entrance Sensor	Activated	Deactivated
2	7	Not Used		
	6	Not Used		
	5	Not Used		
	4	Staple Unit Lock	Locked	Not Locked
	3	Staple Cartridge Sensor	Activated	Deactivated
	2	Staple End Sensor	Activated	Deactivated
	1	Staple Hammer HP Sensor	Activated	Deactivated
	0	Staple Unit Cover Switch	Closed	Opened

5.1.6 OUTPUT CHECK

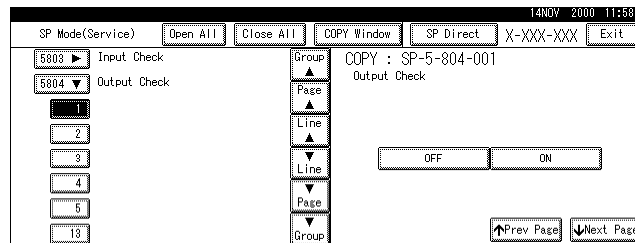
NOTE: Motors keep turning in this mode regardless of upper or lower limit sensor signals. To prevent mechanical or electrical damage, do not keep an electrical component on for a long time.

Main Machine Output Check (SP5804)

1. Open SP mode 5804.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table on the next page.)

3. Press On then press Off to test the selected item.

NOTE: You cannot exit and close this display until you press off to switch off the output check currently executing. Do not keep an electrical component switched on for a long time.



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Output Check Table

NOTE: Pull out the tray before performing the output checks 25, 26, 29, and 30.

Number	On Screen	Service Manual Part Name
1	Main Motor (Fwd)	Main motor (forward)
2	Main Motor (Rev)	Main motor (Reverse) Do not use
3	Registration CL	Registration clutch
4	Development CL	Not used
5	Toner Bottle Motor	Toner supply motor
6	Exhaust Fan Motor (High Speed)	Exhaust fan (High Speed)
7	Exhaust Fan Motor (Low Speed)	Exhaust fan (Low Speed)
8	By-pass Feed CL	By-pass feed clutch
9	1st Paper Feed CL	Upper paper feed clutch
10	2nd Paper Feed CL	Lower paper feed clutch
11	1st Paper Tray Up	Upper paper lift motor (Up)
12	1st Paper Tray Down	Upper paper lift motor (Down)
13	2nd Paper Tray Up	Lower paper lift motor (Up)
14	2nd Paper Tray Down	Lower paper lift motor (Down)
15	Paper Transport CL	Upper relay clutch
16	Paper Transport CL2	Lower relay clutch
17	Fuser Drive Cancel SOL	Fusing drive release solenoid

Number	On Screen	Service Manual Part Name
21	Paper Transport CL3	Relay clutch (Optional paper tray unit)
22	3rd Paper Feed CL	Upper paper feed clutch (Optional paper tray unit)
23	4th Paper Feed CL	Lower paper feed clutch (Optional paper tray unit)
24	Paper Bank Motor	Tray motor (Optional paper tray unit)
25	3rd/LCT Tray Up	Upper Paper lift motor (Up) (Optional paper tray unit or LCT)
26	3rd/LCT Tray Down	Upper paper lift motor (Down) (Optional paper tray unit or LCT)
27	4th Tray Up	Lower paper lift motor (Up) (Optional paper tray unit)
28	4th Tray Down	Lower paper lift motor (Down) (Optional paper tray unit)
29	Tandem Rear Fence Drive Motor – Fwd	Rear fence motor (forward) (Optional LCT)
30	Tandem Rear Fence Drive Motor – Rev	Rear fence motor (reverse) (Optional LCT)
31	Tandem Fence SOL	Side fence solenoid (Optional LCT)
32	Exit Tray Shift Motor	Shift tray motor (Optional shift tray)
33	Exit Junction Gate SOL (Upper Unit)	Exit junction gate (Optional interchange unit)
34	Exit Junction Gate SOL (Lower Unit)	Duplex junction gate (Optional interchange unit)
41	Duplex Inverter Motor (Rev)	Duplex inverter motor (Reverse) (Optional duplex unit)
42	Duplex Inverter Motor (Fwd)	Duplex inverter motor (Forward) (Optional duplex unit)
43	Duplex Transport Motor	Duplex transport motor (Optional duplex unit)
44	Duplex SOL	Inverter gate solenoid (Optional duplex unit)
51	Relay Fan Motor	Bridge cooling fan motor (Optional bridge unit)
52	Relay Transport Motor	Bridge unit drive motor (Optional bridge unit)
53	Relay SOL	Junction gate solenoid (Optional bridge unit)
54	Total Counter	Total counter
60	Polygon Motor	Polygonal mirror motor
61	Polygon Motor/LD	Polygonal mirror motor and laser diode
62	LD ON	Laser diode - Do not use
81	Duplex Unit Free Run 1	Duplex unit free run (without paper)
82	Duplex Unit Free Run 2	Duplex unit free run (with paper)

ARDF Output Check (SP6008)

1. Open SP mode SP6008.
2. Select the SP number that corresponds to the component you wish to check.
(Refer to the table below.)
3. Press On then press Off to test the selected item. You cannot exit and close this display until you click Off to switch off the output check currently executing.

No.	Description
1	Feed Motor (Fwd)
2	Feed-in Motor (Rev)
3	Transport Motor (Fwd)
4	Feed Clutch
5	Pick-up Solenoid
6	Junction Gate Solenoid
7	Stamp Solenoid

Finisher Output Check (SP6118)

1. Open SP mode SP6118.
2. Select the SP number that corresponds to the component you wish to check.
(Refer to the table below.)
3. Press On then press Off to test the selected item. You cannot exit and close this display until you click Off to switch off the output check currently executing.

No.	Description	
	1000-sheet finisher	500-sheet finisher
1	Upper Transport Motor	Main Motor
2	Shift Tray Lift Motor	Output Tray Motor
3	Staple Hammer Motor	Stapler Motor
4	Shift Motor	Jogger Motor
5	Lower Transport Motor	Not Used
6	Shift Tray Exit Motor	Not Used
7	Tray Junction Gate Solenoid	Not Used
8	Jogger Motor	Not Used
9	Stapler Motor	Not Used
10	Stapler Junction Gate Solenoid	Not Used
11	Positioning Roller Solenoid	Not Used
12	Stack Feed-out Motor	Not Used
13	Exit Guide Plate Motor	Not Used
14	Not Used	Paddle Roller Solenoid
15	Not Used	Exit Unit Gear Solenoid
16	Not Used	Stack Height Lever Solenoid
17		Transport Motor

5.1.7 SMC DATA LISTS (SP5990)

1. Open SP mode 5990 and select the number corresponding to the list that you wish to print.

SMC (System Parameter and Data Lists)	
1	All Data List
2	SP Mode Data List
3	UP Mode Data List
4	Logging Data List
5	Self-Diagnostics Results List
7	NIB Summary
8	Capture Log
21	Copy UP Mode List
22	Scanner SP Mode List
23	Scanner UP Mode List

2. Touch "Execute" on the touch panel
3. Select. "Single Face" or "Both Face" then touch "Execute" to start printing.
4. After printing the list, press Exit twice to close the SP Mode screen and return to copy mode.

5.1.8 MEMORY ALL CLEAR (SP5801)

Executing Memory All Clear resets all the settings stored in the NVRAM to their default settings except the following:

SP2989 1-5	PCU ID (South Korea Only)
SP2990 1-5	Original Toner ID (South Korea Only)
SP2991 1-5	Original Toner Counter (South Korea Only)
SP5811 1:	Machine serial number
SP590 7:	Plug & Play Brand Name and Production Name Setting
SP7002 1:	Electrical total counter value

Normally, this SP mode should not be used. This procedure is necessary only after replacing the NVRAM, or when the copier malfunctions because the NVRAM is damaged.

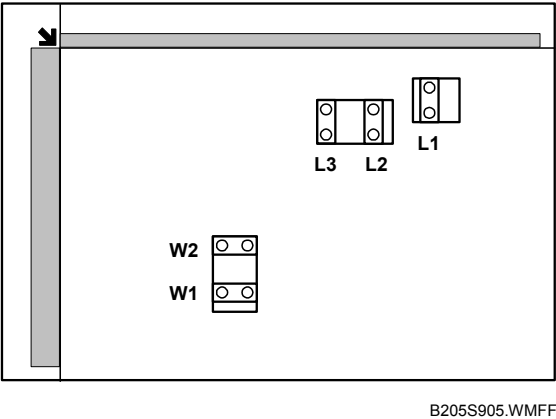
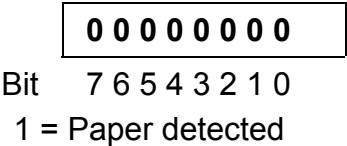
1. Enter the SP mode, do SP5801, and press the number for the item that you want to initialize.

No.	What It Initializes	Comments
1	All Clear	Initializes items 2 ~ 12 below.
2	Engine Clear	Initializes all registration settings for the engine and process settings.
3	SCS	(System Control Service)/SRAM. Initializes default system settings, CSS settings, operation display coordinates, and ROM update information.
4	IMH Memory Clear	Initializes the image file system. (IMH: Image Memory Handler)
5	MCS	(Memory Control Service). Initializes the automatic delete time setting for stored documents.
6	Copier application	Initializes all copier application settings.
7	Fax application	Initializes the fax reset time, job login ID, all TX/RX settings, local storage file numbers, and off-hook timer.
8	Printer application	Initializes the printer defaults, programs registered, the printer SP bit switches, and the printer CSS counter.
9	Scanner application	Initializes the scanner defaults for the scanner and all the scanner SP modes.
10	Network application	Deletes the network file application management files and thumbnails, and initializes the job login ID.
11	NCS	(Network Control Service) Initializes the system defaults and interface settings (IP addresses also), SmartNetMonitor for Admin, WebStatusMonitor settings, and the TELNET settings.
12	R-FAX	Initializes the job login ID, SmartNetMonitor for Admin, job history, and local storage file numbers.
14	Clear DCS Settings	Initializes: SP5845 (All), SP5860 (All), SP5861 (All), SP5863, registered scanner documents and subjects.
15	Clear UCS Settings	Initializes: SP5846 (All), SP5801 15
18	SRM Memory Clear	Initializes information in non-volatile RAM.
19	LCS Memory Clear	Initializes information in non-volatile RAM.

2. Press Execute and turn the main switch off and back on.

5.1.9 APS OUTPUT DISPLAY (SP4301)

When open this SP, a small box will be displayed on the SP mode screen with a series of 0's and 1's. The meaning of the display is as follows.



Bit	Description
7	L2
6	L3
5	W1
4	W2
3	Not Used
2	L1
1	Not Used
0	Not Used

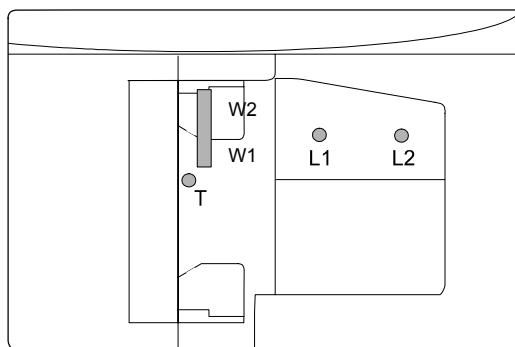
5.1.10 DF APS SENSOR OUTPUT DISPLAY (SP6901)

When open this SP, a small box will be displayed on the SP mode screen with a series of 0's and 1's. The meaning of the display is as follows.

0 0 0 0 0 0 0

Bit 7 6 5 4 3 2 1 0

1 = Paper detected

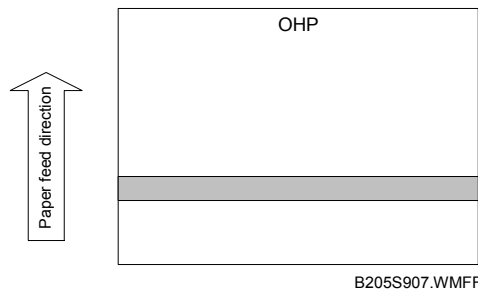


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	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">Large</div> <div style="flex-grow: 1; border-bottom: 1px solid black; position: relative;"> <div style="position: absolute; left: 0; right: 0; top: -5px; bottom: -5px; background: linear-gradient(to right, transparent 49%, black 49% 51%, black 51% 50%, transparent 50%);"></div> </div> <div style="margin-left: 10px;">Small</div> </div>			
W1	0	0	1	1
W2	0	1	0	1

Bit	Description
7	Not Used
6	Not Used
5	W1
4	W2
3	L1
2	L2
1	L3
0	Not Used

5.1.11 NIP BAND WIDTH MEASUREMENT (SP1109)



When paper wrinkling or image off-set occurs, the pressure from the pressure roller can be adjusted by changing the position of the pressure springs. At this time, the nip band width can also be checked with SP1109, as follows.

1. Do a free run (SP5802) for about 50 sheets.
2. Access SP1109 and press the “1” key.
3. Press Copy Window to return to the copy window.
4. Place an OHP sheet (A4/8.5”x11” sideways) on the by-pass tray or in the 2nd paper tray.
5. Press the “Start” key.
The OHP sheet is stopped in the fusing unit for about 20 seconds, then it will be fed automatically.
6. Check the nip band width [A]. The relationship between the position of the pressure spring and the band width is as follows.

NOTE: Check the nip band width around the center of the OHP.

1. Pressure spring position	Nip band width
Upper (default position)	5.2 ± 0.5 mm
Lower	5.3 ± 0.5 mm
2. Envelope feed mode (green lever down) at the default pressure spring position	4.7 ± 0.5 mm

If the width is out of the above specification, the pressure spring should be replaced.



5.2 FIRMWARE UPDATE

The procedure is the same for all firmware modules.

NOTE: If you will change scanner firmware, print 5-990-22 and -23 (SMC reports for scanner settings) before you start this procedure.

1. Turn off the main power switch.
2. Remove the SD card slot cover (⌘ x 2).
3. Insert the SD card [B] containing the software you wish to download into SD card slot C3.
4. Open the front cover.
5. Turn on the main power.
6. Follow the instructions on the operation panel
7. Monitor the downloading status on the operation panel.
 - While downloading is in progress, the panel displays "Writing". When downloading has been completed, the panel displays "Completed".
 - The Start key lights red during downloading, then lights green after downloading is completed. (only for "Operation Panel" downloading)

CAUTION

Never switch off the power while downloading. Switching off the power while the new software is being downloading will damage the boot files in the controller.

8. After confirming that downloading is completed, turn off the main power and remove the SD card.
9. If more software needs to be downloaded, repeat steps 1 to 7.
10. Turn the main power on and confirm that the new software loads and that the machine starts normally.
11. After installing new scanner firmware, do SP5-801-9 (Memory All Clear – Scanner Application). Then input scanner settings that are different from the defaults (see the SMC prints of 5-990-22 and -23 that you made earlier).

Important

If the download failed, an error message appears on the panel. Do the download procedure again. If the second download fails:



- For the controller module, set bit 1 of DIP switch 1 on the controller board to OFF, then switch on the machine. The machine boots from the SD card.
- Other modules. Replace the appropriate PCB.

5.3 SOFTWARE RESET

The software can be rebooted when the machine hangs up. Use the following procedure.

Turn the main power switch off and on.


-or-


Press and hold down   together for over 10 seconds. When the machine beeps once release both buttons. After “Now loading. Please wait” is displayed for a few seconds the copy window will open. The machine is ready for normal operation.

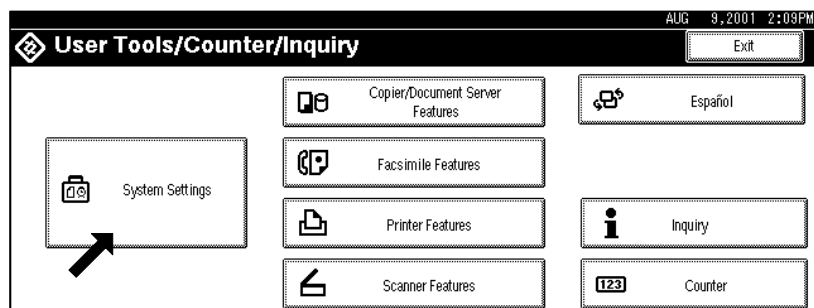
5.4 SYSTEM SETTINGS AND COPY SETTING RESET

5.4.1 SYSTEM SETTING RESET

The system settings in the UP mode can be reset to their defaults. Use the following procedure.

1. Press User Tools/Counter.
2. Hold down  and then press System Settings.

NOTE: You must press  first.



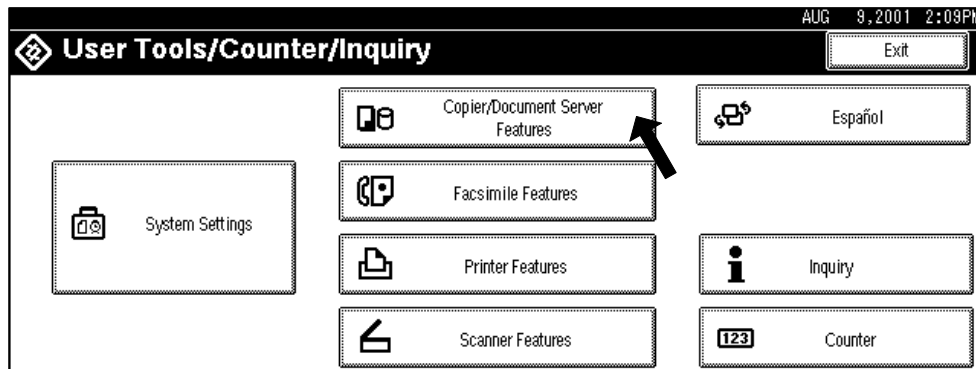
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3. When the message prompts you to confirm that you want to reset the system settings, press Yes.
4. When the message tells you that the settings have been reset, press Exit.

5.4.2 COPIER SETTING RESET

The copy settings in the UP mode can be reset to their defaults. Use the following procedure.

1. Press User Tools/Counter.
2. Hold down **#** and then press Copier/Document Server Settings.
NOTE: You must press **#** first.



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3. When the message prompts you to confirm that you want to reset the Copier Document Server settings, press Yes.
4. When the message tells you that the settings have been reset, press Exit.

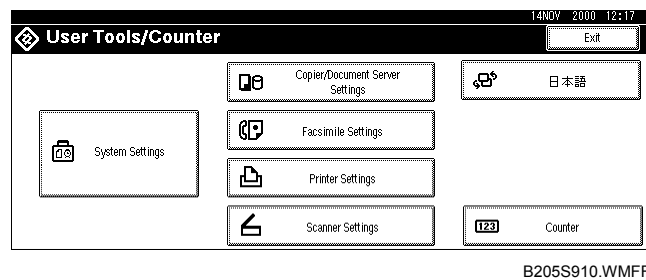
5.5 USER TOOLS

The user program (UP) mode can be accessed by users and operators, and by sales and service staff. UP mode is used to input the copier's default settings. The user can reset the default settings at any time. (➡ 5.4)

5.5.1 HOW TO USE UP MODE

UP Mode Initial Screen: User Tools/Counter Display

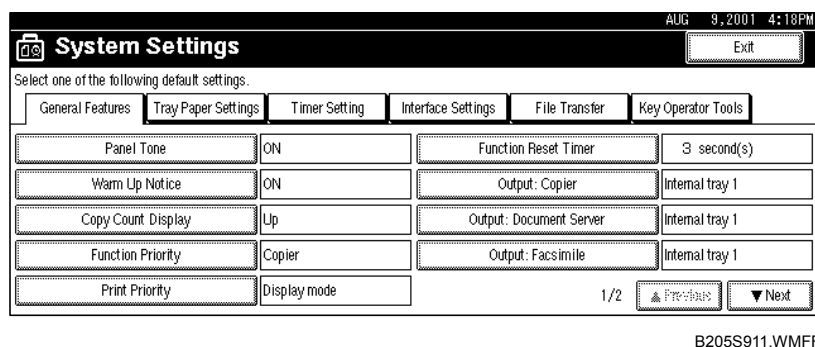
To enter the UP mode, press User Tools/Counter.



System Settings

In the User Tools/Counter display, press System Settings.

Click a tab to display the settings. If the Next button is lit in the lower right corner, press it to display more options. Perform the settings, press Exit to return to the User Tools/Counter display, and then press Exit to return to the copy window.



Copier/Document Server Features

In the User/Tools Counter display, press Copy/Document Server Settings.

Click a tab to display the settings. If the Next button is lit in the lower right corner, press it to display more options. Perform the settings, press Exit to return to the User Tools/Counter display, and then press Exit to return to the copy window.

Printer, Facsimile, Scanner Settings

In the User/Tools Counter display, press Printer Settings, Facsimile, or Scanner Settings to open the appropriate screen and then click the tab to display more settings. The screen below shows the Printer Features screen.

Copier/Document Server Features Exit

Select items to set.

General Features Reproduction Ratio Edit Stamp Input/Output

Auto Paper Select Priority ON Auto Image Density Priority

Auto Tray Switching With image rotation Copy Quality

Paper Display Display Image Density

Original Type Priority Text

Original Type Display Display

1/4 Previous Next

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Inquiry

In the User/Tools Counter display, press Inquiry.

The following SP mode settings will be displayed.

- Service Telephone Number (SP58121)
- Sales Telephone Number (SP8124)
- Consumable Telephone Number (SP8123)
- Toner Name (SP-841)

i Inquiry Exit

► Consumables Telephone No. to order 012345678

► Machine Maintenance/Repair Telephone No. 12345678

Serial No. of Machine 00000010156

► Sales Representative Telephone No. 01234568

Print Inquiry List

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Counter

In the User/Tools Counter display, press Counter.

The screenshot shows a terminal window titled "Counter" with a timestamp "AUG 9, 2001 2:28PM" in the top right corner. The window contains several fields with numerical values and buttons. The fields are: "Total" with value "9998160", "Copier" with value "9998021", "Printer" with value "9998139", and "A3/DLT" with value "9998000". There is an "Exit" button in the top right and a "Print Counter List" button in the bottom right.

Counter	Value
Total	9998160
Copier	9998021
Printer	9998139
A3/DLT	9998000

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The following SP mode counters will be displayed.

- Copy Counter (SP5045)
- Printer Counter (SP5045)

View the settings, press Print Counter Exit to return to the User Tools/Counter display, and then press Exit to return to the copy window.

5.6 LEDS

Controller

Number	Normal	Controller Software Download	Error
LED 1	Off	Blinking	Off
LED 2	Blinking	Blinking	Lit or Off

SBCU

Number	Normal	SBCU Software Download	Error
LED 1	Lit	Lit	Off or Blinking
LED 2	Blinking	Lit	Lit (except downloading) or Off

5.7 DIP SWITCHES

Controller

SW1

Number	OFF	ON
1	Boot from SD card	Default: Boot from Flash ROM
2 to 7	Default: OFF DFU	---
8	---	Default DFU

SBCU

SW102

Destination	Bit			
	1	2	3	4
Japan	OFF	OFF	OFF	OFF
NA	ON	OFF	OFF	OFF
EU/ASIA	OFF	ON	OFF	OFF

SW103

DFU. Do not change these settings.

5.8 USING THE DEBUG LOG

This machine provides a Save Debug Log feature that allows the Customer Engineer to save and retrieve error information for analysis.

Every time an error occurs, debug information is recorded in volatile memory but this information is lost when the machine is switched off and on.




To capture this debug information, the Save Debug Log feature provides two main features:

- Switching on the debug feature so error information is saved directly to the HDD for later retrieval.
- Copying the error information from the HDD to an SD card.

When a user is experiencing problems with the machine, follow the procedure below to set up the machine so the error information is saved automatically to the HDD. Then ask the user to reproduce the problem.

5.8.1 SWITCHING ON AND SETTING UP SAVE DEBUG LOG

The debug information cannot be saved until the “Save Debug Log” function has been switched on and a target has been selected.


1. Enter the SP mode.
 - Press  (Clear Modes) then use the 10-key pad to enter ①①⑦.
 - Press and hold down  (Clear/Stop) for more than 3 seconds.
 - Press “Copy SP” on the touch-panel.
 - Enter ⑤⑧⑤⑦ then press .
2. Under “5857 Save Debug Log”, press ①.

```

COPY : SP-5857-001
Save Debug Log
On/Off (1:ON 0:OFF)

  1

Initial 0
  
```

3. On the control panel keypad, press “1” then press . This switches the Save Debug Log feature on.

NOTE: The default setting is “0” (OFF). This feature must be switched on in order for the debug information to be saved.

4. Next, select the target destination where the debug information will be saved. Under “5857 Save Debug Log”, touch “2 Target”, enter “2” with the operation panel key to select the hard disk as the target destination, then press \oplus .

COPY : SP-5-857-002

Save Debug Log

Target (2:HDD 3:SD Card)

2

Initial 2

NOTE: Select “3 SD Card” to save the debug information directly to the SD card if it is inserted in the service slot.

5. Now touch “5858” and specify the events that you want to record in the debug log. SP5858(Debug Save When) provides the following items for selection.

1	Engine SC Error	Saves data when an engine-related SC code is generated.
2	Controller SC Error	Saves debug data when a controller-related SC Code is generated.
3	Any SC Error	Saves data only for the SC code that you specify by entering code number.
4	Jam	Saves data for jams.

NOTE: More than one event can be selected.

Example 1: To Select Items 1, 2, 4

Touch the appropriate item(s). Press “ON” for each selection. This example shows “Engine SC Error” selected.

COPY : SP-5-858-001

Debug Save When

Engine SC Error

OFF

ON

Example 2: To Specify an SC Code

Touch “3 Any SC Error”, enter the 3-digit SC code number with the control panel number keys, then press \oplus . This example shows an entry for SC670.

COPY : SP-5-858-001

Debug Save When

Any SC Error

670

NOTE: For details about SC code numbers, please refer to the SC tables in Section “4. Troubleshooting”.

6. Next, select the one or more memory modules for reading and recording debug information. Touch “5859”.

Under “5859” press the appropriate key item for the module that you want to record.

Enter the appropriate 4-digit number, then press (#).

NOTE: Refer to the two tables below for the 4-digit numbers to enter for each key.

The example below shows “Key 1” with “2222” entered.

COPY : SP-5-859-001 Debug Save Key No. Key 1	2222
--	------

The following keys can be set with the corresponding numbers. (The initials in parentheses indicate the names of the modules.)

4-Digit Entries for Keys 1 to 10

KEY NO.	COPY	PRINTER	SCANNER	WEB
1	2222 (SCS)			
2	2223 (SRM)			
3	256 (IMH)			
4	1000 (ECS)			
5	1025 (MCS)			
6	4848(COPY)	4400 (GPS)	5375 (Scan)	5682 (NFA)
7	2224 (BCU)	4500 (PDL)	5682 (NFA)	6600 (WebDB)
8		4600 (GPS-PM)	3000 (NCS)	3300 (PTS)
9		2000 (NCS)	2000 (NCS)	6666 (WebSys)
10		2224 (BCU)		2000 (NCS)

Service
Tables

NOTE: The default settings for Keys 1 to 10 are all zero (“0”).

Key to Acronyms

Acronym	Meaning	Acronym	Meaning
ECS	Engine Control Service	NFA	Net File Application
GPS	GW Print Service	PDL	Printer Design Language
GSP-PM	GW Print Service – Print Module	PTS	Print Server
IMH	Image Memory Handler	SCS	System Control Service
MCS	Memory Control Service	SRM	System Resource Management
NCS	Network Control Service	WebDB	Web Document Box (Document Server)

The machine is now set to record the debugging information automatically on the HDD (the target selected with SP5-857-002) for the events that you selected SP5-858 and the memory modules selected with SP5-859.

Please keep the following important points in mind when you are doing this setting:

- Note that the number entries for Keys 1 to 5 are the same for the Copy, Printer, Scanner, and Web memory modules.
- The initial settings are all zero.
- These settings remain in effect until you change them. Be sure to check all the settings, especially the settings for Keys 6 to 10. To switch off a key setting, enter a zero for that key.
- You can select any number of keys from 1 to 10 (or all) by entering the corresponding 4-digit numbers from the table.
- You cannot mix settings for the groups (COPY, PRINTER, etc.) for 006~010. For example, if you want to create a PRINTER debug log you must select the settings from the 9 available selections for the "PRINTER" column only.
- One area of the disk is reserved to store the debug log. The size of this area is limited to 4 MB.



5.8.2 RETRIEVING THE DEBUG LOG FROM THE HDD

1. Insert the SD card into service slot C3 of the copier.
2. Enter the SP mode and execute SP5857 009 (Copy HDD to SD Card (Latest 4 MB) to write the debugging data to the SD card.
3. Use a card reader to copy the file and send it for analysis to your local Ricoh representative by email, or just send the SD card by mail.

5.8.3 RECORDING ERRORS MANUALLY

Since only SC errors and jams are recorded to the debug log automatically, for any other errors that occur while the customer engineer is not on site, please instruct customers to perform the following immediately after occurrence to save the debug data. Such problems would include a controller or panel freeze.

NOTE: In order to use this feature, the customer engineer must have previously switched on the Save Debug Feature (SP5857-001) and selected the hard disk as the save destination (SP5857-002).

1. When the error occurs, on the operation panel, press  (Clear Modes).
2. On the control panel, enter "01" then hold down  for at least 3 sec. until the machine beeps then release. This saves the debug log to the hard disk for later retrieval with an SD card by the service representatives.
3. Switch the machine off and on to resume operation.

The debug information for the error is saved on the hard disk so the service representatives can retrieve it on their next visit by copying it from the HDD to an SD card.

5.8.4 NEW DEBUG LOG CODES

SP5857-015 Copy SD Card-to-SD Card: Any Desired Key

This SP copies the log on an SD card (the file that contains the information written directly from shared memory) to a log specified by key number. The copy operation is executed in the log directory of the SD card inserted in the same slot. (This function does not copy from one slot to another.) Each SD card can hold up to 4 MB of file data. Unique file names are created for the data during the copy operation to prevent overwriting files of the same name. This means that log data from more than one machine can be copied onto the same SC card. This command does not execute if there is no log on the HDD for the name of the specified key.

SP5857-016 Create a File on HDD to Store a Log

This SP creates a 32 MB file to store a log on the HDD. However, this is not a completely empty file. The created file will hold the number “2225” as the SCS key number and other non-volatile information. Even if this SP is not executed, a file is created on the HDD when the first log is stored on the HDD, but this operation takes time. This creates the possibility that the machine may be switched off and on before the log can be created completely. If you execute this SP to create the log file beforehand, this will greatly reduce the amount of time required to acquire the log information and save onto the HDD. With the file already created on the HDD for the log file, the data only needs to be recorded; a new log file does not require creation. To create a new log file, execute SP5857-011 to delete the debug log data from the HDD and then execute this SP (SP5857-016).

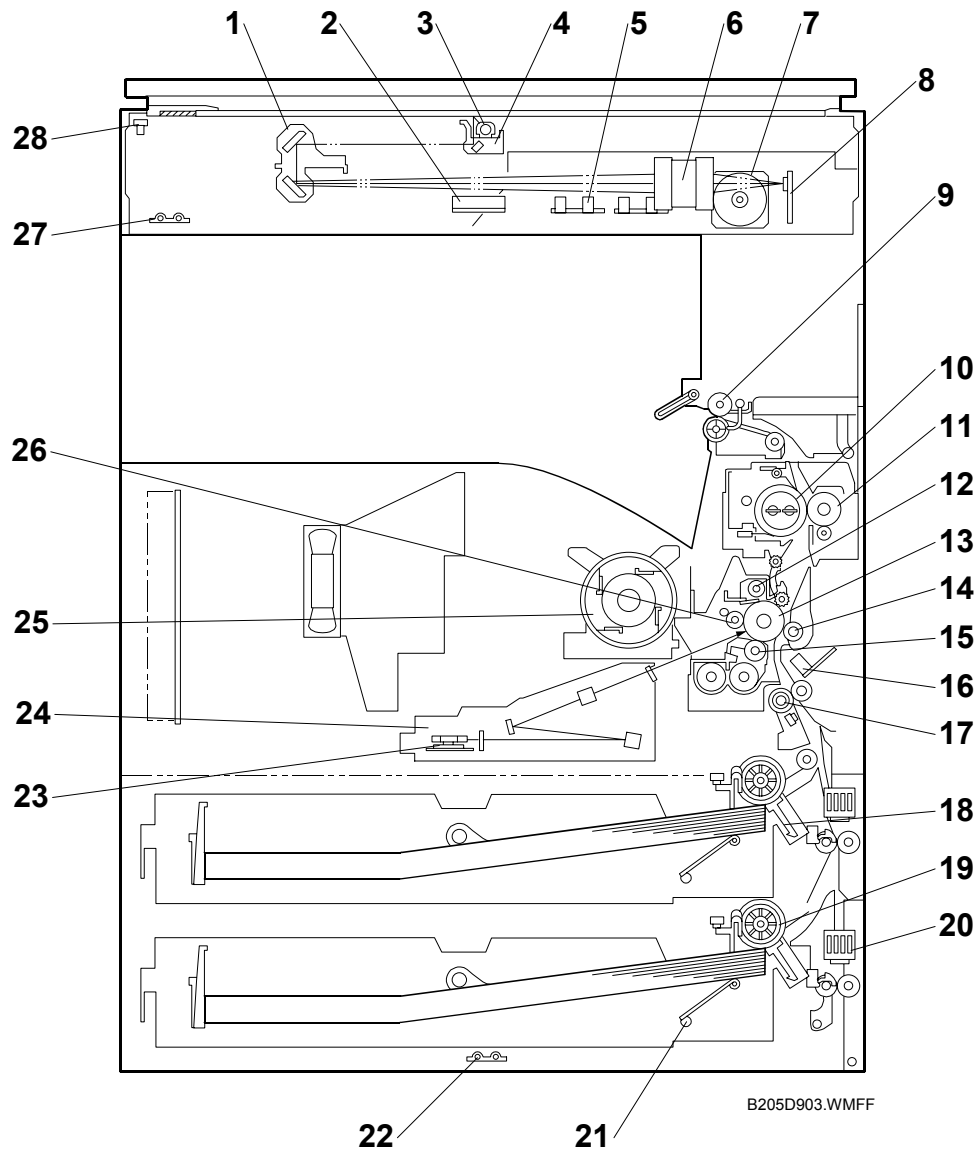
SP5857-017 Create a File on SD Card to Store a Log

This SP creates a 4 MB file to store a log on an SD card. However, this is not a completely empty file. The created file will hold the number “2225” as the SCS key number and other non-volatile information. Even if this SP is not executed, a file is created on the SD card when the first log is stored on the SD card, but this operation takes time. This creates the possibility that the machine may be switched off and on before the log can be created completely. If you execute this SP to create the log file beforehand, this will greatly reduce the amount of time required to acquire the log information and save onto the SD card. With the file already created on the SD card for the log file, the data only needs to be recorded; a new log file does not require creation. To create a new log file, execute SP5857-012 to delete the debug log data from the SD card and then execute this SP (SP5857-017).

6. DETAILS

6.1 OVERVIEW

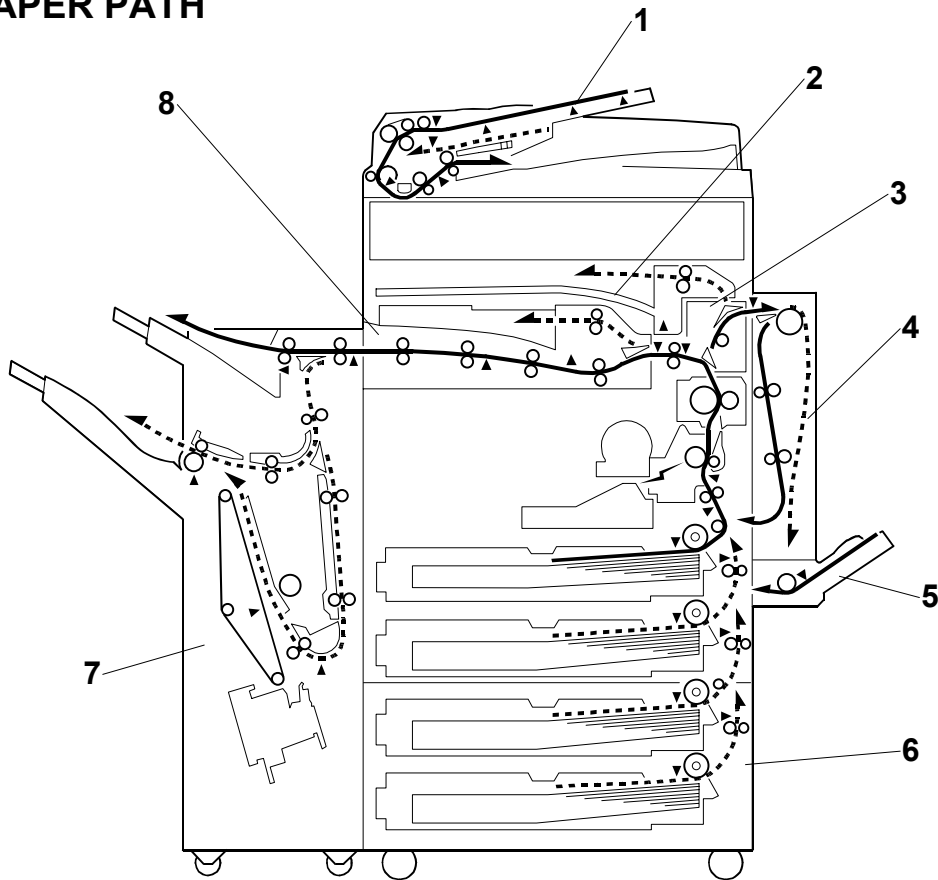
6.1.1 MECHANICAL COMPONENTS



Detailed
Descriptions

1. 2nd scanner
2. Original width sensor
3. Exposure lamp
4. 1st scanner
5. Original length sensor
6. Lens
7. Scanner motor
8. SBU board
9. Exit roller
10. Fusing hot roller
11. Fusing pressure roller
12. Cleaning unit
13. OPC drum
14. Transfer roller
15. Development roller
16. ID sensor
17. Registration roller
18. Friction pad
19. Paper feed roller
20. Paper size sensor
21. Bottom plate
22. Tray heater
23. Polygon mirror motor
24. Laser unit
25. Toner supply bottle holder
26. Drum charge roller
27. Anti-condensation heater
28. Scanner home position sensor

6.1.2 PAPER PATH



B205D904.WMFF

1. Optional ADF
2. Optional 1-bin Tray
3. Optional Interchange Unit
4. Optional Duplex Unit
5. Optional By-pass Feed Tray
6. Optional Paper Tray Unit
7. Optional 1000-sheet Finisher
8. Optional Bridge Unit

Detailed
Descriptions

6.1.3 ELECTRICAL COMPONENT DESCRIPTIONS

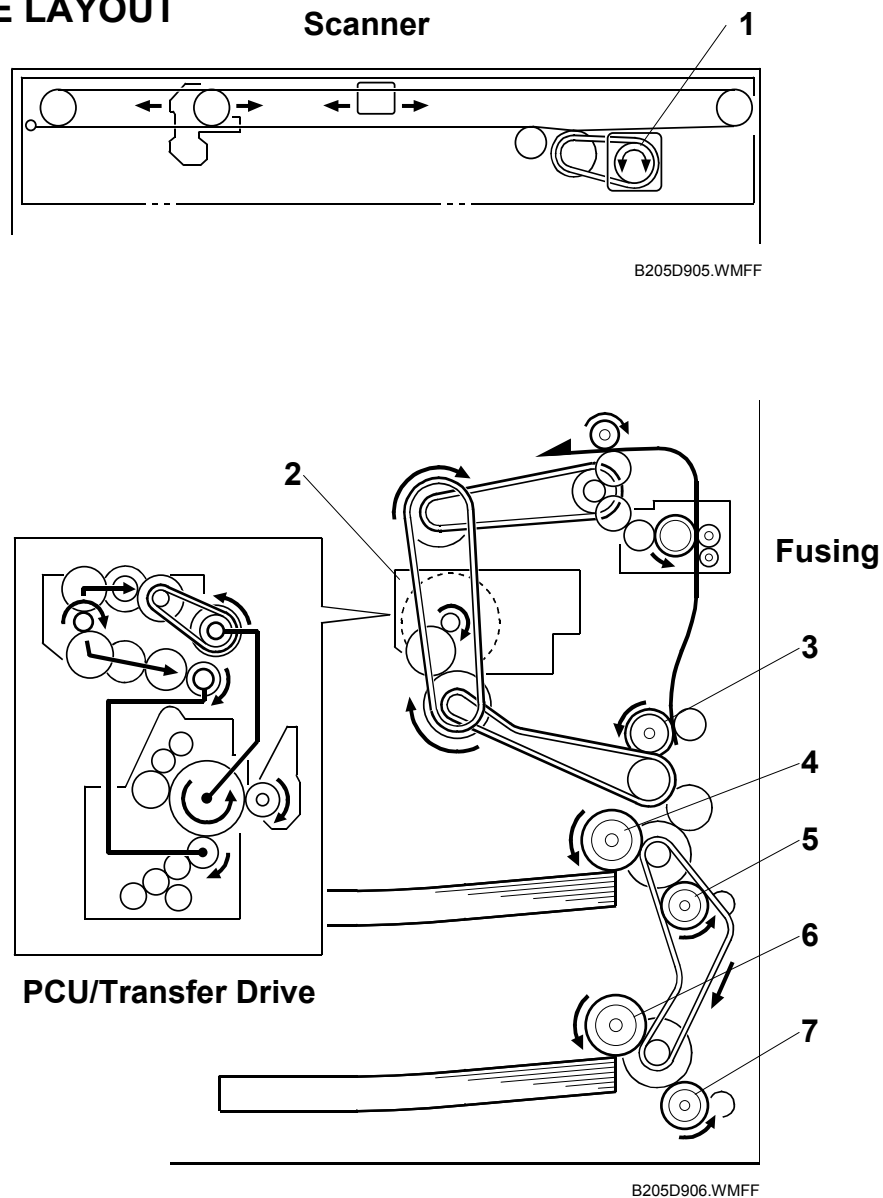
Refer to the electrical component layout on the reverse side of the point-to-point diagram for the location of the components.

Symbol	Name	Function
Motors		
M1	Scanner	Drives the 1st and 2nd scanners.
M2	Polygonal Mirror	Turns the polygonal mirror.
M3	Main	Drives the main unit components.
M4	Exhaust Fan	Removes heat from around the fusing unit.
M5	Upper Paper Lift	Raises the bottom plate in the 1st paper tray.
M6	Lower Paper Lift	Raises the bottom plate in the 2nd paper tray.
M7	Toner Supply	Rotates the toner bottle to supply toner to the development unit.
Magnetic Clutches		
MC1	Upper Paper Feed	Starts paper feed from the 1st paper tray.
MC2	Lower Paper Feed	Starts paper feed from the 2nd paper tray.
MC3	Upper Relay	Drives the upper relay rollers.
MC4	Lower Relay	Drives the lower relay rollers.
MC4	Registration	Drives the registration rollers.
Switches		
SW1	Main	Provides power to the machine. If this is off, there is no power supplied to the machine.
SW2	Right Upper Cover	Detects whether the right upper cover is open or not.
SW3	Right Cover	Cuts the +5VLD and +24V dc power line and detects whether the right cover is open or not.
SW4	Right Lower Cover	Detects whether the right lower cover is open or not.
SW5	Upper Paper Size	Determines what size of paper is in the upper paper tray.
SW6	Lower Paper Size	Determines what size of paper is in the lower paper tray.
SW7	New PCU Detect	Detects when a new PCU is installed. Japan Only
SW8	Front Cover Safety	Cuts the +5VLD and +24V dc power line and detects whether the front cover is open or not.
SW9	Operation	Provides power for machine operation. The machine still has power if this switch is off.

Symbol	Name	Function
Sensors		
S1	Scanner HP	Informs the CPU when the 1st and 2nd scanners are at home position.
S2	Platen Cover	Informs the CPU that the platen cover is in the up or down position (related to the APS/ARE functions).
S3	Original Width	Detects original width. This is one of the APS (Auto Paper Select) sensors.
S4	Original Length 1	Detects original length. This is one of the APS (Auto Paper Select) sensors.
S5	Original Length 2	Detects original length. This is one of the APS (Auto Paper Select) sensors.
S6	Toner Density (TD)	Detects the amount of toner inside the development unit.
S7	1st Paper End	Informs the CPU when the 1st paper tray runs out of paper.
S8	2nd Paper End	Informs the CPU when the 2nd paper tray runs out of paper.
S9	Image Density (ID)	Detects the density of various patterns and the reflectivity of the drum for process control.
S10	Paper Overflow	Detects paper overflow in the built-in copy tray.
S11	Paper Exit	Detects misfeeds.
S12	Upper Relay	Detects misfeeds.
S13	Lower Relay	Detects misfeeds.
S14	Registration	Detects misfeeds and controls registration clutch off-on timing.
S15	1st Paper Lift	Detects when the paper in the 1st paper tray is at the feed height.
S16	2nd Paper Lift	Detects when the paper in the 2nd paper tray is at the feed height.
S17	1st Paper Height – 1	Detects the amount of paper in the 1st paper tray.
S18	1st Paper Height – 2	Detects the amount of paper in the 1st paper tray.
S19	2nd Paper Height – 1	Detects the amount of paper in the 2nd paper tray.
S20	2nd Paper Height – 2	Detects the amount of paper in the 2nd paper tray.

Symbol	Name	Function
PCBs		
PCB1	Controller	Controls all applications both directly and through other control boards.
PCB2	PSU (Power Supply Unit)	Provides dc power to the system and ac power to the fusing lamp and heaters.
PCB3	SBCU (Scanner & Base Engine Control Unit)	Controls the fusing lamp and the mechanical parts of the machine.
PCB4	SBU (Sensor Board Unit)	Contains the CCD, and outputs a video signal to the IPU board.
PCB5	Lamp Stabilizer	Stabilizes the power to the exposure lamp.
PCB6	LDD (Laser Diode Driver)	Controls the laser diode.
PCB7	Operation Panel	Controls the operation panel.
PCB8	High Voltage Supply	Supplies high voltage to the drum charge roller, development roller, and transfer roller.
PCB9	Memory (Option)	Expands the memory capacity for the copier, printer, and scanner features.
PCB10	IPU (Image Processing Unit)	Performs the image processing functions.
Solenoids		
SOL1	Fusing Drive Release	Releases the drive for the fusing unit.
Lamps		
L1	Exposure Lamp	Applies high intensity light to the original for exposure.
L2	Main Fusing Lamp	Heats the center of the hot roller.
L3	Secondary Fusing Lamp	Heats both ends of the hot roller.
L4	Quenching Lamp	Neutralizes any charge remaining on the drum surface after cleaning.
Heaters		
H1	Anti-condensation (Option)	Turns on when the main power switch is off to prevent moisture from forming on the optics.
H2	Tray (Option)	Turns on when the main power switch is off to prevent moisture from forming around the paper trays.
Others		
TS1	Fusing Thermostats	Opens the fusing lamp circuit if the fusing unit overheats.
TH1	Fusing Thermistors	Detects the temperature of the hot roller.
LSD 1	Laser Synchronization Detector	Detects the laser beam at the start of the main scan.
CO1	Mechanical Counter	Keeps track of the total number of prints made.
CO2	Key Counter (Option)	Used for control of authorized use. If this feature is enabled for copying, copying will be impossible until it is installed.

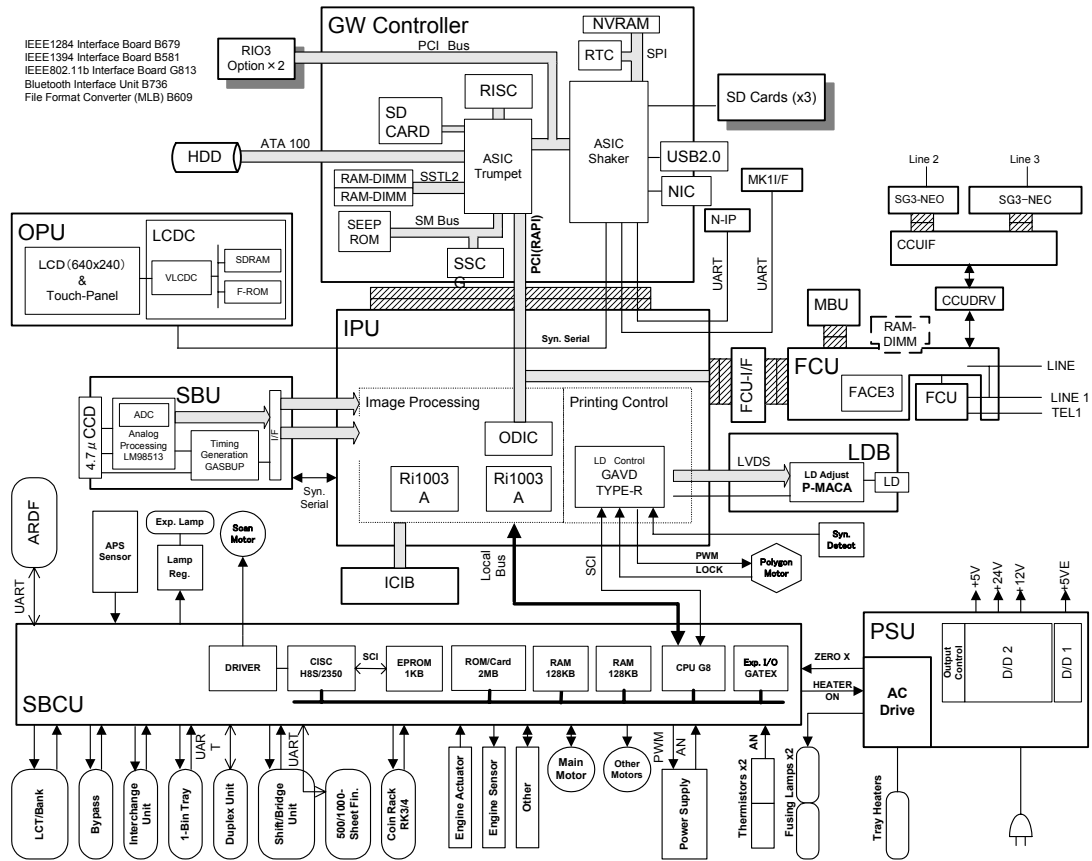
6.1.4 DRIVE LAYOUT



1. Scanner Drive Motor
2. Main Motor
3. Registration Clutch
4. Upper Paper Feed Clutch
5. Upper Transport Clutch
6. Lower Paper Feed Clutch
7. Lower Transport Clutch

6.2 BOARD STRUCTURE

6.2.1 OVERVIEW

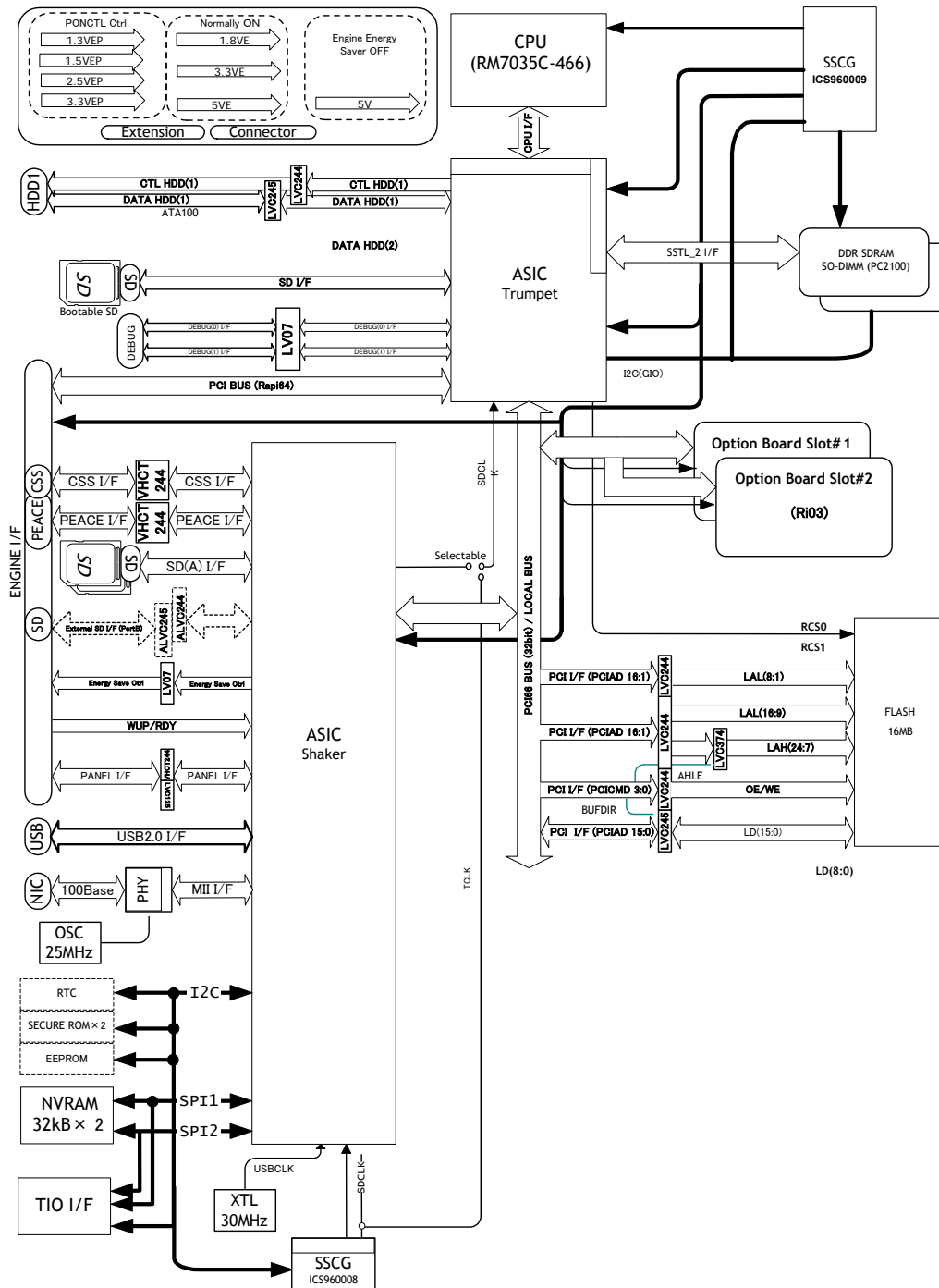


B205D910.WMFF

Here is a summary of the new features of the boards in this machine:

- **GW Controller.** Controls the memory and the fax/scanner/printer options
Important: The NIB (Network Interface Board) and USB 2.0 interfaces are built into the controller board and do not require installation.
- **SBCU (Scanner Base engine Control Unit).** This is the scanner and engine control board. It controls the following functions:
 - Engine sequence
 - Timing control for peripherals
 - Image processing control and video control
 - Operation control
 - Drive control for the sensors, motors, and solenoids of the printer and scanner
 - High voltage supply board control
 - Fusing control
- **SBU (Sensor Board Unit).** Converts the analog signals to 8-bit digital signals, and then sends them to the IPU for processing.
- **IPU (Image Processing Unit).** The IPU board does the image processing (for example, auto shading, filtering, magnification, gradation processing), and finally sends the data to the LD drive board. The IPU also functions as a motherboard because it has connection points for the GW controller and FCU. The ICIB (Illegal Copy Interface Board) also connects directly to the IPU
- **LDB (Laser Diode Board).** The laser diode board is controlled directly by the GAVD mounted on the IPU.
- **Operation Panel.** The operation panel LCD is controlled by the VLCDC mounted on the LCDC (LCD Controller).
- **PSU (Power Supply Unit).** The ac drive circuit is the same as the previous model. The newly-designed PSU consumes only 1W when the machine is not operating, a decrease of 12W.
- **Fax Unit B766.** The FCU (Facsimile Control Unit) is new (it is also used on other new models). The fax unit is an option for this machine. The NCU (Network Control Circuit) that interfaces the fax unit and telephone network is built into the FCU.

6.2.2 CONTROLLER BOARD



B205D926.WMFF

The controller controls all applications, including copier, printer, scanner, and fax applications. To add the optional printer, or scanner function, an SD card must be inserted in an SD card slot of the controller. The fax option, however, requires installation of an FCU.

ASCI Trumpet. Contains the dedicated GW controller chips of the shared resources (the CPU, memory, and HDD hardware) for the copying and printing functions.

- **CPU (RM7035C-466)** The central processing unit that controls the operation of the controller board.
- **HDD.** A 2.5-in HDD unit (capacity more than 20 GB) can be connected using the IDE I/F. The disks are portioned as shown in the table below.
- **SD (Bootable C3).** Service slot for firmware version updates, moving applications to other SD cards, and downloading/uploading NVRAM contents.
- **DDR SDRAM.** The image memory for the printer function where image compression, image rotation and other operations are done. (Standard: 128 MB, Option: 256 MB)

ASIC Shaker. Controls the following functions: USB, Ethernet, PCI (optional boards for Bluetooth, FireWire, Wireless LAN, and Centronics), debug serial, I2C, applications on SD cards mounted in SD card slots C1 and C2, and the energy save features.

- **SD.** This is the interface for SD card slots C1, and C2.

B205/B209	C1 is for the Printer/Scanner B767. C2 is for PostScript3 B757 or Data Overwrite Security B735.
D007/D008	C1 is for the Printer/Scanner Unit D310, Printer Unit D313, or RPCS Unit D314. C2 is for PostScript3 D318. Data Overwrite Security B735 is merged with the printer option SD card in C1, or it can reside in C1 alone if no printer unit is installed.

- **Board Option Slots 1, 2.** Only one of the following options can be installed in either Slot 1 or Slot 2: IEEE1284 Interface Board B679 (Centronics), IEEE802.11b G813 (Wireless LAN), IEEE1394 Interface Board B581 (FireWire), Bluetooth Interface Unit B736. The File Format Converter B609 (MLB) can be installed in either slot.

NOTE: IEEE1394 is used with the B205/B209 Series machines only. The D007/D008 Series machines do not use IEEE1394.

- **Flash ROM.** Stores the program. Maximum capacity: 16 MB.
- **USB.** The interface for USB 2.0 devices. Supports both low-speed and high-speed modes. USB support is built-into the controller. No installation is required for the USB function. But, SP5985 001 must be set to "1" to enable the network functions.
- **NIB.** The Ethernet interface connection. Network support is built-into the controller. No installation is required for the network function. But, SP5985 002 must be set to "1" to enable the network functions.
- **NVRAM.** The 64 MB memory (32 MBx2) that stores many settings: SP mode settings, UP mode settings, system log information, user accounts, etc. Also, the number of user accounts can be increases by installing an optional NVRAM (EEPROM).

The hard disk is partitioned as shown below.

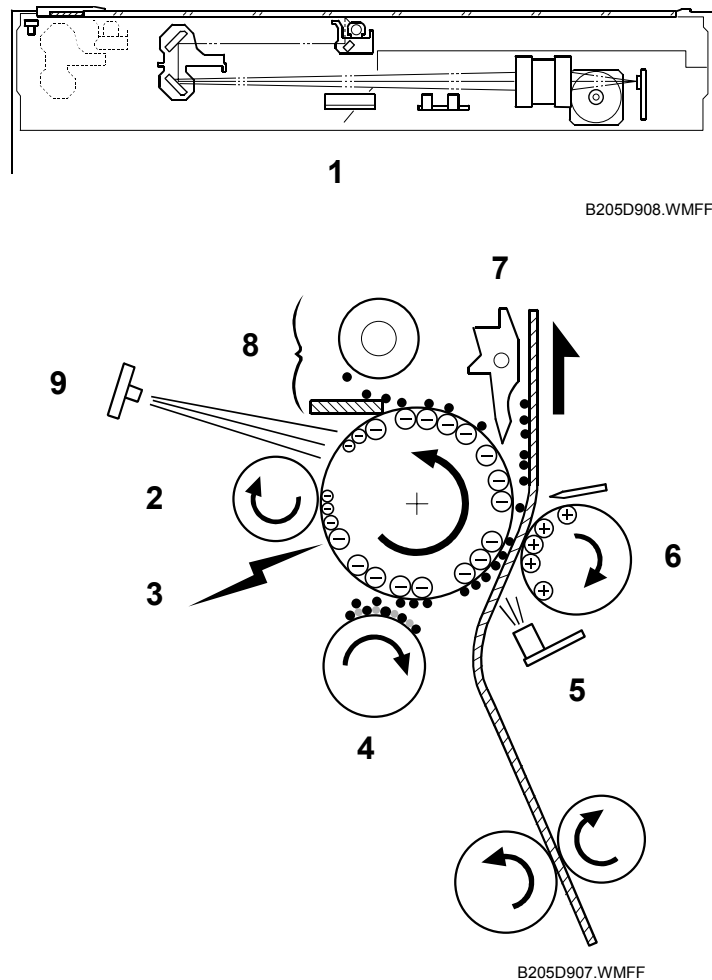
Partition	Size (MB)	Function	Power Off
File System 1	500	Downloaded fonts, forms	Remains
File System 2	500	Job spooling area	Remains
File System 3	2,000	Work data area	Remains ^{*1}
Image LS ^{*2}	3,955	Document server, local storage archive	Remains ^{*3}
Image Temp	3,870	Collation, sample prints, locked prints	Erased ^{*3}
SAF Thumbnails	300	Stores SAF thumbnails	Remains
Job Log	200	Job log	Remains
Address Book	300	Stores address book data	Remains
Image Transfer	1,002	Stores images for transfer	Remains
Capture	500	Stores captured images	Remains
Debug	500	Object and swap area for debugging	Remains
SDK	1,200	Used for SDK application	Remains
Debug Log	150	Debug log	Remains
Mail Box	200	Stores images for mail box	Remains
Others	542	Miscellaneous	Remains
Total	15,629	---	---

*1 Used for document server.

*2 When an application uses an image page, it uses the Image LS area first. If this area is not available, it uses the Image TMP area.

*3 Commonly used for applications to store copy, printer, fax, and scanner data. Storage capacity: About 9,000 pages (3,000 files).

6.3 COPY PROCESS



1. EXPOSURE

A xenon lamp exposes the original. Light reflected from the original passes to the CCD, where it is converted into an analog data signal. This data is converted to a digital signal, processed and stored in the memory. At the time of printing, the data is retrieved and sent to the laser diode. For multi-copy runs, the original is scanned once only and stored to the memory.

2. DRUM CHARGE

In the dark, the charge roller gives a negative charge to the organic photoconductive (OPC) drum. The charge remains on the surface of the drum because the OPC layer has a high electrical resistance in the dark.

3. LASER EXPOSURE

The processed data scanned from the original is retrieved from the memory and transferred to the drum by a laser beam, which forms an electrical latent image on the drum surface. The amount of charge remaining as a latent image on the drum depends on the laser beam intensity, which is controlled by the IPU board.

4. DEVELOPMENT

The magnetic developer brush on the development rollers comes in contact with the latent image on the drum surface. Toner particles are electrostatically attached to the areas of the drum surface where the laser reduced the negative charge on the drum.

5. ID SENSOR

The laser forms a sensor pattern on the drum surface. The ID sensor measures the reflectivity of the pattern. The output signal is one of the factors used for toner supply control. Also, the ID sensor measures the reflectivity of the drum surface. The output signal is used for charge roller voltage control.

6. IMAGE TRANSFER

Paper is fed to the area between the drum surface and the transfer roller at the proper time for aligning the copy paper and the developed image on the drum surface. Then, the transfer roller applies a high positive charge to the reverse side of the paper. This positive charge pulls the toner particles from the drum surface onto the paper. At the same time, the paper is electrostatically attracted to the transfer roller.

7. PAPER SEPARATION

Paper separates from the drum as a result of the electrostatic attraction between the paper and the transfer roller. The discharge plate helps separate the paper from the drum.

8. CLEANING

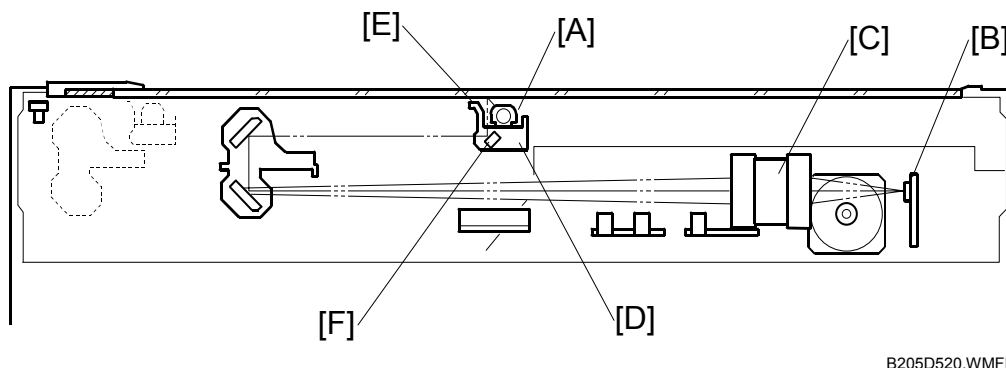
The cleaning blade removes any toner remaining on the drum surface after the image transfers to the paper.

9. QUENCHING

The light from the quenching lamp electrically neutralizes the charge on the drum surface.

6.4 SCANNING

6.4.1 OVERVIEW

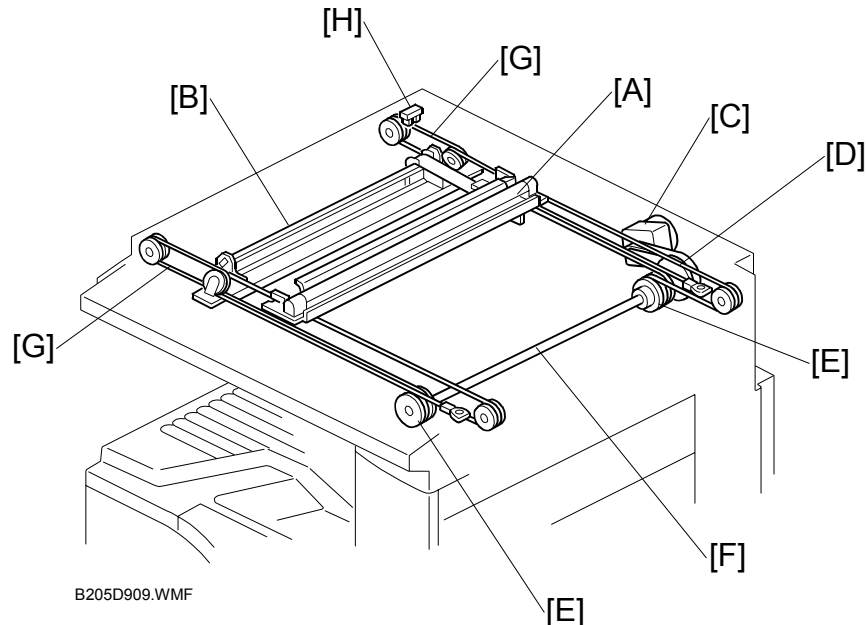


The original is illuminated by the exposure lamp (a xenon lamp in this model) [A]. The image is reflected onto a CCD (charge coupled device) [B] via the 1st, 2nd, 3rd mirrors, and lens [C].

The 1st scanner [D] consists of the exposure lamp, a reflector [E], and the 1st mirror [F].

A lamp stabilizer energizes the exposure lamp. The light reflected by the reflector is of almost equal intensity, to reduce shadows on pasted originals.

6.4.2 SCANNER DRIVE



A stepper motor drives the scanner. The 1st and 2nd scanners [A,B] are driven by the scanner drive motor [C] through the timing belt [D], scanner drive pulley [E], scanner drive shaft [F], and two scanner wires [G].

- Book mode -

The scanner drive board controls and operates the scanner drive motor. In full size mode, the 1st scanner speed is 150 mm/s during scanning. The 2nd scanner speed is half that of the 1st scanner.

In reduction or enlargement mode, the scanning speed depends on the magnification ratio. The returning speed is always the same, whether in full size or magnification mode. The image length change in the sub scan direction is done by changing the scanner drive motor speed, and in the main scan direction it is done by image processing on the IPU board.

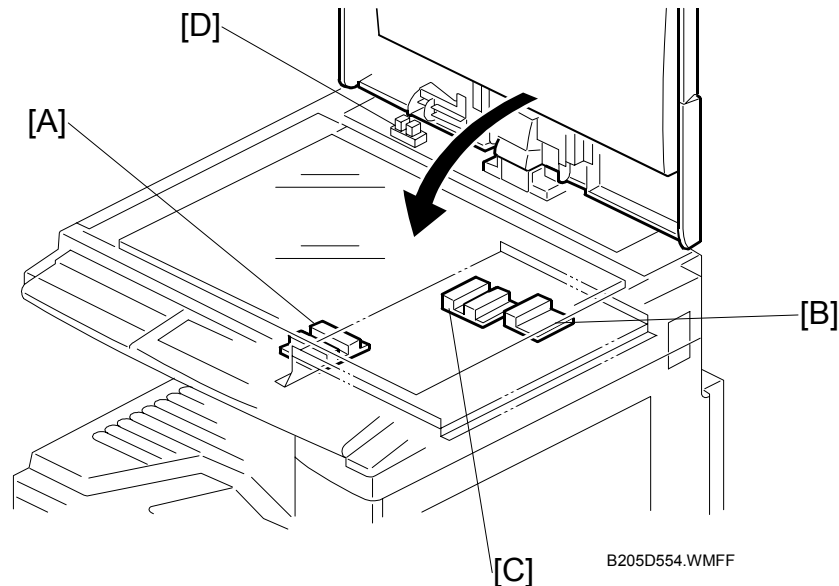
Magnification in the sub-scan direction can be adjusted by changing the scanner drive motor speed using SP4008. Magnification in the main scan direction can be adjusted using SP4009.

- ADF mode -

The scanners are always kept at their home position (the scanner H.P sensor [H] detects the 1st scanner) to scan the original. The ADF motor feeds the original through the ADF. In reduction/enlargement mode, the image length change in the sub-scan direction is done by changing the ADF motor speed. Magnification in the main scan direction is done in the IPU board, like for book mode.

Magnification in the sub-scan direction can be adjusted by changing the ADF motor speed using SP6006. In the main scan direction, it can be adjusted with SP4009, like for book mode.

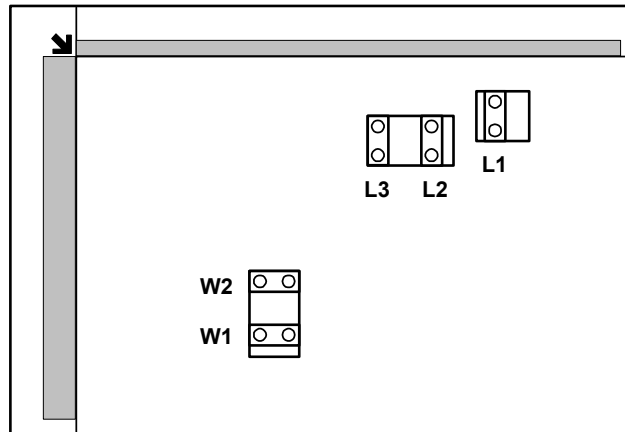
6.4.3 ORIGINAL SIZE DETECTION: PLATEN MODE



In the optics cavity for original size detection, there are five reflective sensors in three APS units [A], [B], and [C]. The original width sensors [A] detect the original width, and the original length sensors [B] and [C] detect the original length. These are the APS (Auto Paper Select) sensors. Each APS sensor is a reflective photosensor.

While the main switch is on, these sensors are active and the original size data is always sent to the CPU. However, the CPU checks the data only when the platen cover sensor [D] is activated. This is when the platen is positioned about 15 cm above the exposure glass, for example while it is being closed. The CPU can recognize the original size from the combination of on/off signals from the APS sensors.

If the copy is made with the platen fully open, the CPU decides the original size from the sensor outputs when the Start key is pressed.



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Original Size		Length Sensor			Width Sensor	
A4/A3 version	LT/DLT version	L3	L2	L1	W2	W1
A3	11" x 17"	O	O	O	O	O
B4	10" x 14"	O	O	O	O	X
Foolscap	8.5" x 13"	O	O	X	X	X
A4-L	8.5" x 11"	O	O	X	X	X
B5-L		O	X	X	X	X
A4-S	11" x 8.5"	X	X	X	O	O
B5-S		X	X	X	O	X
A5-L, A5-S		X	X	X	X	X

NOTE: L: Lengthwise, S: Sideways, O: High (paper present), X: Low

For other combinations, "CANNOT DETECT ORIG. SIZE" will be indicated on the operation panel display (if SP 4-303 is kept at the default setting).

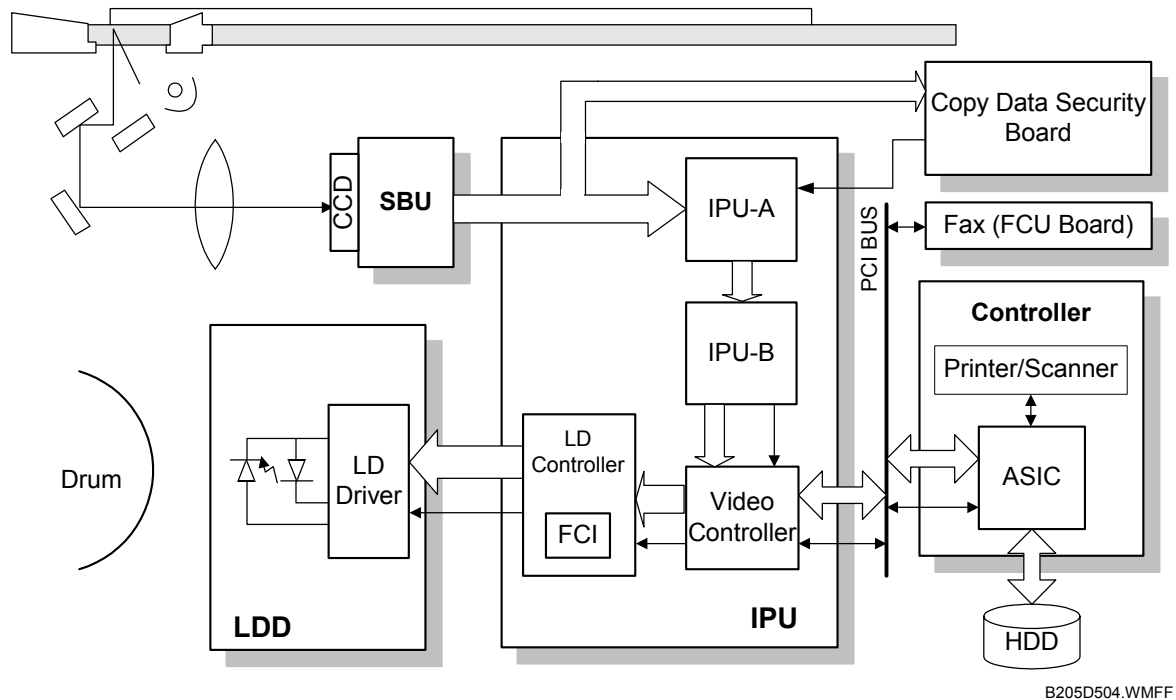
The above table shows the outputs of the sensors for each original size. This original size detection method eliminates the necessity for a pre-scan and increases the machine productivity.

However, if the by-pass feeder is used, note that the machine assumes that the copy paper is lengthwise. For example, if A4 sideways paper is placed on the by-pass tray, the machine assumes it is A3 paper and scans the full A3 area for the first copy of each page of the original, disregarding the original size sensors. However, for each page, the data signal to the laser diode is stopped to match the copy paper length detected by the registration sensor.

Original size detection using the ADF is described in the manual for the ADF.

6.5 IMAGE PROCESSING

6.5.1 OVERVIEW



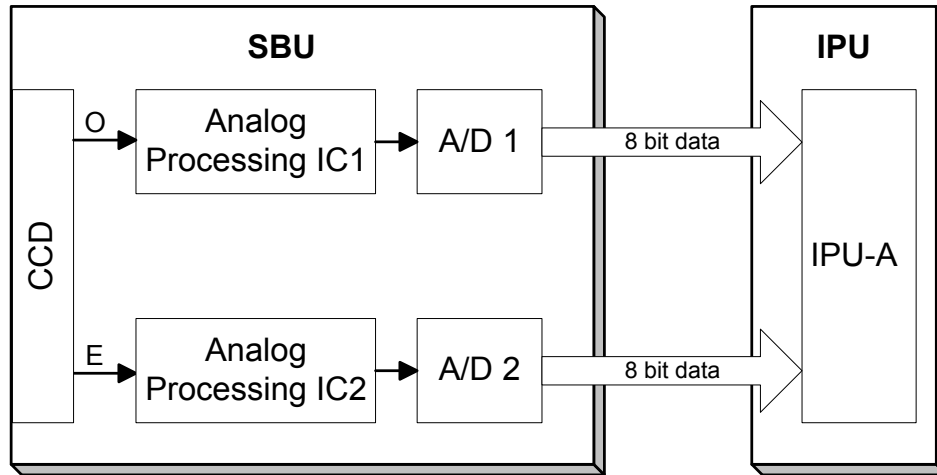
The CCD generates an analog video signal. The SBU (Sensor Board Unit) converts the analog signal to an 8-bit digital signal, then it sends the digital signal to the IPU (Image Processing Unit) board.

The IPU board performs the image processing, such as auto shading, filtering, magnification, gradation processing.

The ASIC on the controller board performs the image editing, such as image repeat, double copy.

Finally, the IPU board sends the video data to the LD drive board.

6.5.2 SBU (SENSOR BOARD UNIT)



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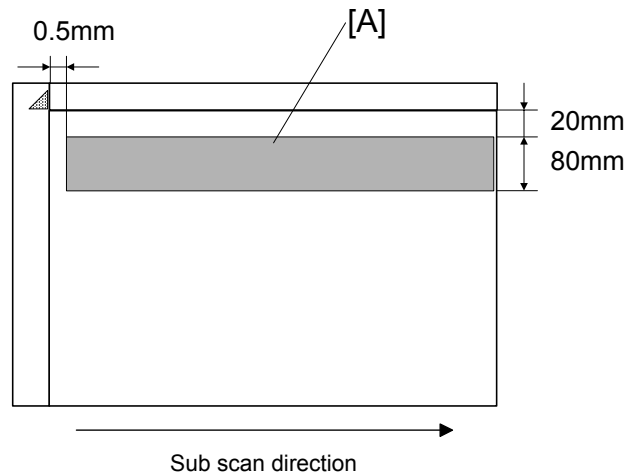
The CCD converts the light reflected from the original into an analog signal. The CCD line has 7,400 pixels and the resolution is 600 dpi (23.6 lines/mm).

The CCD has two output lines, for odd and even pixels, to the analog processing IC. The analog processing IC performs the following operations on the signals from the CCD:

1. Z/C (Zero Clamp):
Adjusts the black level reference for even pixels to match the odd pixels.
2. Signal Amplification:
The analog signal is amplified by operational amplifiers in the AGC circuit.
3. Auto Gain Control
Adjusts the gain curve for the scanned image density.

After the above processing, the analog signals are converted to 8-bit signals by the A/D converter. This will give a value for each pixel on a scale of 256 grades. Then, the digitized image data goes to the IPU board.

6.5.3 AUTO IMAGE DENSITY



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ADS prevents the background of an original from appearing on copies.

The copier scans the auto image density detection area [A] as shown in the diagram. This corresponds to a few mm at one end of the main scan line. As the scanner scans down the page, the SBU detects the peak white level for each scan line. The IPU performs the ADS function in accordance with the peak white level.

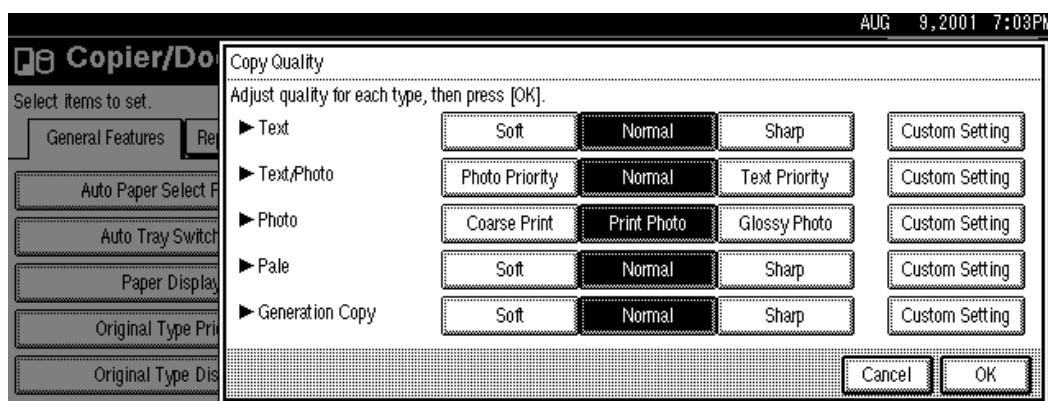
When an original with a gray background is scanned, the density of the gray area is the peak white level density. Therefore, the original background will not appear on copies. Because peak level data is taken for each scan line, ADS corrects for any changes in background density down the page.

As with previous digital copiers, the user can select manual image density when selecting auto image density mode, and the machine will use both settings when processing the original.

6.5.4 ORIGINAL TYPE SETTINGS

The user can select one of the following modes with the User Tools screen: Text, Text/Photo, Photo, Pale, Generation. Each of these modes has a range of different settings (e.g. Soft, Normal, Sharp, etc). For each mode, a Custom Setting option is also available. This Custom Setting holds the values selected with the SP modes, which can be adjusted to meet special requirements that cannot be covered by the standard settings.

To display this screen, press User Tools/Counter , press Copier/Document Server Settings, press the General Features tab, and then press Copy Quality.



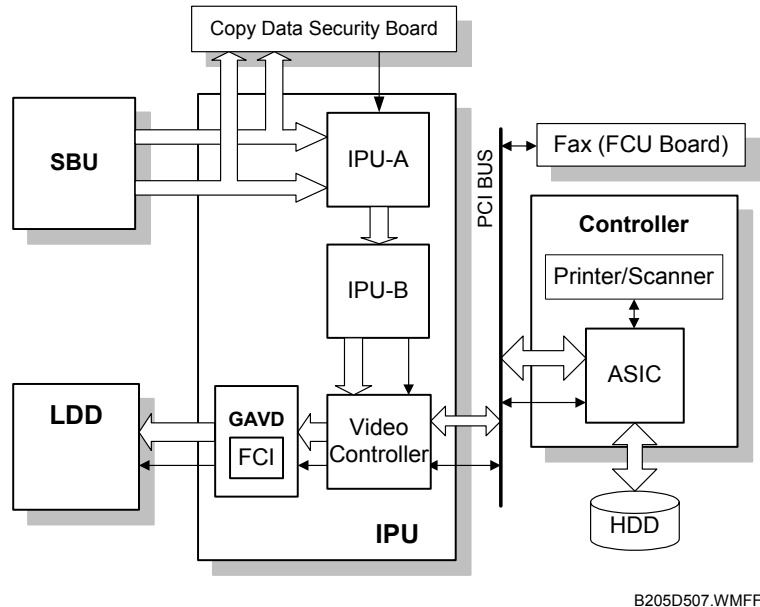
B205D916.WMF

Mode	Function
Text	Best reproduction of text and sharp lines. Ignores background texture. (☛ p.6-25 Text Mode)
Text/Photo	Good reproduction of mixed text and photographs with accurate grayscaling, better than that achieved in the Text mode. (☛ p.6-27 Text/Photo Mode)
Photo	Best possible reproduction of photographs. (☛ p.6-26 Photo Mode)
Pale	Reproduction similar to text mode, but of lower contrast. Ideal for copying thin originals. (☛ p.6-28 Pale Mode)
Generation Copy	Attempts to achieve the best reproduction of copied originals that are faded because they are copies of copies. (☛ p.6-29 Generation Copy)

In addition, there are two main image processing modes: grayscale processing and binary picture processing. When no optional hard disk has been installed, the machine uses binary picture processing. However, when the optional hard disk has been installed, the machine uses grayscale processing. The user or technician cannot select the mode.

6.5.5 IPU (IMAGE PROCESSING UNIT)

Overview



The image data from the SBU goes to the IPU (Image Processing Unit) ICs on the IPU board, which carry out the following processes on the image data.

IPU-A

- Auto shading
- Pre-filtering
- Magnification
- Test pattern generation

IPU-B

- Filtering (MTF and smoothing)
- ID gamma correction
- Grayscale processing
- Binary picture processing
- Error diffusion
- Dithering

Video Controller

- Video path control

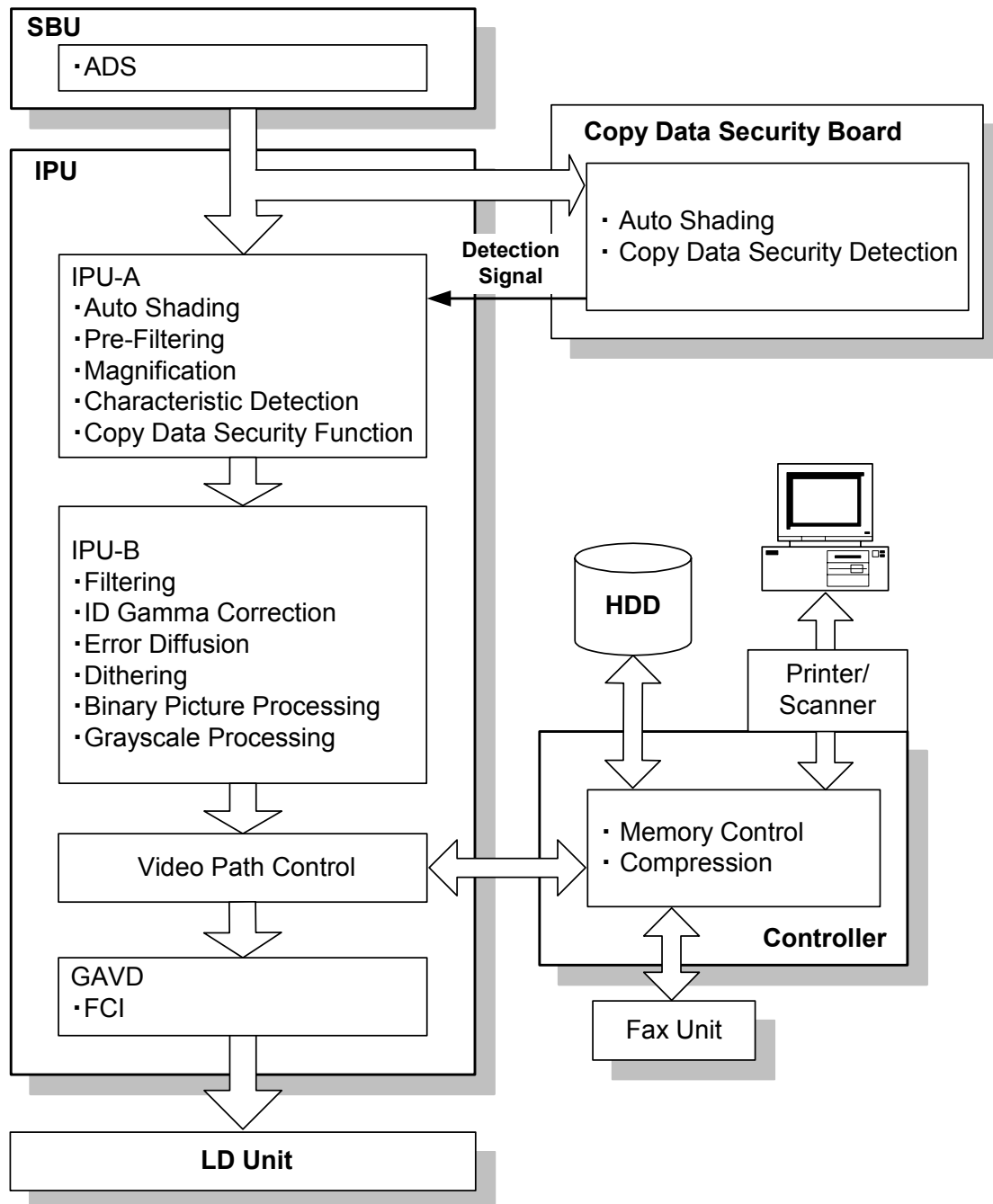
GAVD

- FCI (Fine Character and Image)

The image data then goes to the LD driver (LDD).

Image Processing Path

This diagram shows the various stages of the image process and where they are done.



B205D559.WMFF

SP Modes for Each Image Processing Step

The following tables show which settings and SP modes are used for each image processing step.

Text Mode

		Text Mode			
		Soft	Normal	Sharp	Custom Setting
ADS (SBU)		As selected at the operation panel			
Shading Correction	~34%	Enabled			
	35%~				
Small Smoothing Filter	~34%	Three-line filter			
	35%~	One-line filter			
Main Scan Magnification	~34%	Enabled			
	35%~				
Mirroring	~34%	Enabled only in the ADF mode			
	35%~				
Characteristic Detection	~34%	None			
	35%~	Weak	Middle	Strong	4-903-2 ~ 4
MTF/Smoothing Filter	~34%	MTF (Weak)	MTF (Medium)	MTF (Strong)	4-903-1
	35%~	Character (Weak)	Character (Medium)	Character (Strong)	4-903-2 ~ 4
Independent Dot Erase	~34%	None			4-904-1
	35%~	None			
Background Erase	~34%	None			4-904-6
	35%~	None			
γ Correction	~34%	Text			4-904-11
	35%~	Character (Text)			
Gradation	~34%	Normal error diffusion		Binary picture processing	4-903-1
	35%~	Character error diffusion		Binary picture processing	4-903-2 ~ 4
Line Width Correction	~34%	2-907-1			
	35%~				

Photo Mode

		Photo Mode				
		Coarse Print	Print Photo	Glossy Photo	Custom Setting	
ADS (SBU)		As selected at the operation panel				
Shading Correction	~34%	Enabled				
	35%~					
Small Smoothing Filter	~34%	Three-line filter				
	35%~	One-line filter				
Main Scan Magnification	~34%	Enabled				
	35%~					
Mirroring	~34%	Enabled only in the ADF mode				
	35%~					
Characteristic Detection	~34%	None				
	35%~	None			4-903-6 ~ 8	
MTF/Smoothing Filter	~34%	Character	Smoothing		4-903-5	
	35%~	Smoothing		Character	4-903-6 ~ 8	
Independent Dot Erase	~34%	None				4-904-2
	35%~	None				
Background Erase	~34%	None				4-904-7
	35%~	None				
γ Correction	~34%	Dither (16x16)	Dither (8x8)	Dither (Character)	4-904-12	
	35%~					
Gradation	~34%	Dither (16x16)	Dither (8x8)	Normal error diffusion	4-903-5	
	35%~			Character error diffusion	4-903-6 ~ 8	
Line Width Correction	~34%	2-907-2				
	35%~					

Text/Photo Mode

		Text/Photo Mode			
		Photo priority	Normal	Text Priority	Custom Setting
ADS (SBU)		As selected at the operation panel			
Shading Correction	~34%	Enabled			
	35%~				
Small Smoothing Filter	~34%	Three-line filter			
	35%~	One-line filter			
Main Scan Magnification	~34%	Enabled			
	35%~				
Mirroring	~34%	Enabled only in the ADF mode			
	35%~				
Characteristic Detection	~34%	None			
	35%~	Strong	Middle	Weak	4-903-10 ~ 12
MTF/Smoothing Filter	~34%	MTF (Weak)	MTF (Medium)	MTF (Strong)	4-903-9
	35%~	Character (Weak)	Character (Medium)	Character (Strong)	4-903-10 ~ 12
Independent Dot Erase	~34%	None			4-904-3
	35%~	None			
Background Erase	~34%	None			4-904-8
	35%~	None			
γ Correction	~34%	Text/Photo			4-904-13
	35%~	Character (Text/Photo)			
Gradation	~34%	Normal error diffusion			
	35%~	Character error diffusion			
Line Width Correction	~34%	2-907-3			
	35%~				

Pale Mode

		Pale Mode			
		Photo priority	Normal	Text Priority	Custom Setting
ADS (SBU)		As selected at the operation panel			
Shading Correction	~34%	Enabled			
	35%~				
Small Smoothing Filter	~34%	Three-line filter			
	35%~	One-line filter			
Main Scan Magnification	~34%	Enabled			
	35%~				
Mirroring	~34%	Enabled only in the ADF mode			
	35%~				
Characteristic Detection	~34%	None			
	35%~	Weak	Middle	Strong	4-903-14 ~ 16
MTF/Smoothing Filter	~34%	MTF (Weak)	MTF (Medium)	MTF (Strong)	4-903-13
	35%~	Character (Weak)	Character (Medium)	Character (Strong)	4-903-14 ~ 16
Independent Dot Erase	~34%	None			4-904-4
	35%~	None			
Background Erase	~34%	None			4-904-9
	35%~	None			
γ Correction	~34%	Pale			4-904-14
	35%~	Character (Pale)			
Gradation	~34%	Normal error diffusion			
	35%~	Character error diffusion			
Line Width Correction	~34%	2-907-4			
	35%~				

Generation Copy

		Generation Copy Mode			
		Photo priority	Normal	Text Priority	Custom Setting
ADS (SBU)		As selected at the operation panel			
Shading Correction	~34%	Enabled			
	35%~				
Small Smoothing Filter	~34%	Three-line filter			
	35%~	One-line filter			
Main Scan Magnification	~34%	Enabled			
	35%~				
Mirroring	~34%	Enabled only in the ADF mode			
	35%~				
Characteristic Detection	~34%	None			
	35%~	Weak	Middle	Strong	4-903-18 ~ 20
MTF/Smoothing Filter	~34%	MTF (Weak)	MTF (Medium)	MTF (Strong)	4-903-17
	35%~	Character (Weak)	Character (Medium)	Character (Strong)	4-903-18 ~ 20
Independent Dot Erase	~34%	Weak			4-904-5
	35%~	Weak			
Background Erase	~34%	Weak			4-904-10
	35%~	Weak			
γ Correction	~34%	Generation copy			4-904-15
	35%~	Character (Generation copy)			
Gradation	~34%	Normal error diffusion			
	35%~	Character error diffusion			
Line Width Correction	~34%	2-907-5			
	35%~				

Auto Shading

Auto shading does two things.

- Zeroes the black level for each scan line of data.
- Corrects for variations in white level across the main scan.

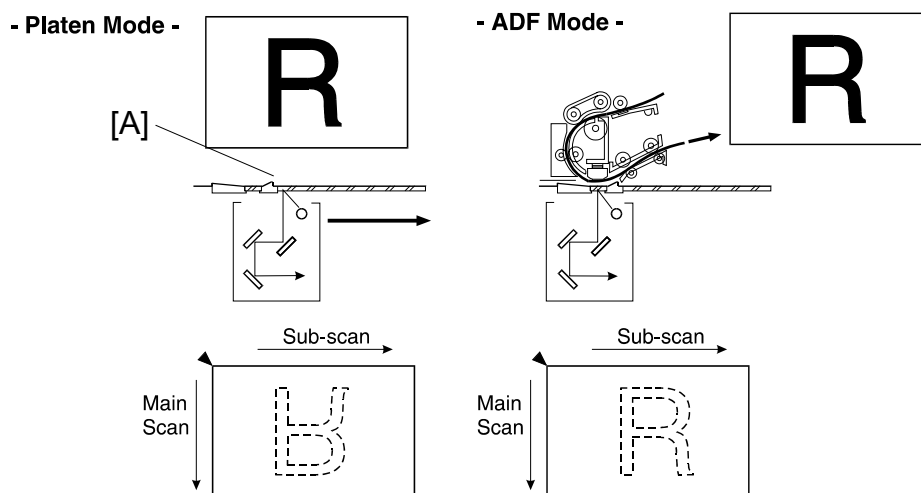
Pre-Filtering

Pre-filter smooths mainly parallel lines in the main scan direction and extended lines in the sub-scan direction. This reduces moiré and spurious noise in images.

Main Scan Magnification/Reduction

Changing the scanner speed enables reduction and enlargement in the sub-scan direction. However, the IPU-A chip handles reduction and enlargement in the main scan direction. The processing for main scan magnification/reduction is the same as in the previous digital machines.

Mirroring for ADF Mode



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When making a copy using the ADF, the magnification circuit creates a mirror image. This is because the scanning starting position in the main scan direction is at the other end of the scan line in ADF mode (compared with platen mode). In platen mode, the original is placed face down on the exposure glass, and the corner at [A] is at the start of the main scan. The scanner moves down the page. In ADF mode, the ADF feeds the leading edge of the original to the DF exposure glass, and the opposite top corner of the original is at the main scan start position.

To create the mirror image, the IPU-A stores each line in a LIFO (Last In First Out) memory.

Characteristic Detection

This function uses software filters to detect edge areas, non-edge areas, and areas of shaded dot patterns.

The result determines the image processing that will be applied to each pixel.

Filtering

Overview

There are some software filters for enhancing the desired image qualities of the selected original mode. These filters are the MTF filter, the smoothing filter, characteristic filter, and independent dot erase.

Depending on the original mode and the reproduction ratio, the machine will use either MTF/smoothing, or the filter determined by characteristic detection.

If MTF/smoothing is used, it is applied to all areas of the original, regardless of whether they are edge areas, non-edge areas, or independent dots.

- The MTF filter emphasizes sharpness and is used in all original types except Photo mode.
- The smoothing filter is used in Photo mode.

If the characteristic filter is used, the filter for each pixel depends on the image data type that was detected by characteristic detection.

MTF Filter

An MTF filter is used for all original types except Photo mode.

When the reproduction ratio is less than 35%, this filter is applied to all image data pixels, regardless of whether they are in an edge area or non-edge area.

When the reproduction ratio is 35% or more, the type of MTF filter used for each pixel depends on the results of characteristic detection.

Smoothing Filter

A smoothing filter is used in Photo mode instead of MTF. It is applied to all image data pixels, regardless of whether they are in an edge area or non-edge area.

With some combinations of reproduction ratio and image mode, the type of smoothing used for each pixel depends on the results of characteristic detection (see the Photo mode table in SP Modes for Each Processing Step).

Characteristic Filter

A characteristic filter is applied instead of MTF, smoothing, and ID gamma correction with some combinations of original type and reproduction ratio. See the 'SP Modes for Each Processing Step' section.

For example, In text mode, for the 'Normal' original type, if the reproduction ratio is less than 35%, MTF (medium) is used for all pixels in the image. However, if the reproduction ratio is 35% or more, the 'medium' characteristic filter is used, and the processing depends on whether the pixel was in an edge area, a non-edge area, or in an area shaded using a dot pattern.

Each characteristic filter consists of a combination of the following features: MTF, smoothing, error diffusion, dithering, ID gamma correction. For each of these features, the machine chooses from two types when making up a characteristic filter.

Independent Dot Erase

Independent dot erase removes unwanted dots from the image.

Independent dot erase is enabled only for Generation Copy mode (according to the default settings). However, for the "Custom Setting" original modes, independent dot detection can be enabled and adjusted with SP4-904-2~4. With a larger SP setting, more dots are detected as independent dots and erased, even if the dot density is high. However, dots in mesh-like images may be mistakenly detected as independent dots.

Background Erase

By default, this process is disabled in all original modes. However, it can be enabled with SP mode.

Usually, dirty background is erased using the Auto Image Density (ADS) function. However, sometimes, dirty background areas will still appear. These can be erased with this function.

The threshold level for erasing can be changed with SP4-904-6~10.

ID Gamma (γ) Correction

The machine automatically selects the most appropriate ID gamma correction based on the selected original type.

Also, for certain combinations of reproduction ratio and original type, characteristic detection is used. In this case, the machine can use one of two gamma correction tables. The one that is used is decided separately for each pixel, and depends on the results of characteristic detection.

Gradation Processing

Overview

There are four types of gradation processing:

- Grayscale processing: This has 4 output levels for each pixel.
- Binary picture processing: This has only two output levels (black and white).
- Error diffusion: There are two error diffusion processing types (normal and characteristic detection)
- Dithering: There are two dithering processing types (normal and characteristic detection).

Grayscale Processing

In this machine, the 8-bit image data is converted into 2-bit data. This produces up to 4 image density levels for each pixel.

To realize this, this machine uses a form of pulse width modulation. In this machine, pulse width modulation consists of the following processes:

- Laser diode pulse positioning
- Laser diode power/pulse width modulation

Laser diode power and pulse width modulation is done by the laser diode drive board (LDD). Briefly, the width of the laser pulse for a pixel depends on the output level (image density level: from 0 to 255) required for the pixel.

Note that although the LDD can create 256 levels per pixel, the machine only uses 8 of these, and only four are used for any one job. A gamma table determines which four output levels are used. The gamma table is different for each original type setting.

Binary Picture Processing

The 8-bit image data is converted into 1-bit data (black and white image data).

Error Diffusion

The error diffusion process reduces the difference in contrast between light and dark areas of a halftone image. Each pixel is corrected using the difference between it and the surrounding pixels. The corrected pixels are compared with an error diffusion matrix.

There are two types of error diffusion processing: One is 'normal'. The other is part of the characteristic detection process, in which the error diffusion method is determined separately for each pixel. The error diffusion type (normal or characteristic) depends on the reproduction ratio and the original type (refer to the SP Modes for Each Image Processing Step tables).

Dithering

Each pixel is compared with the pixel in the same position in a dither matrix. Several matrixes are available, to increase or decrease the detail on the copy.

Line width correction

This function is effective in all original modes.

Usually, lines will bulge in the main scan direction as a result of the negative/positive development system that is used in this model. So, pixels on edges between black and white areas are compared with adjacent pixels, and if the pixel is on a line, the line thickness will be reduced.

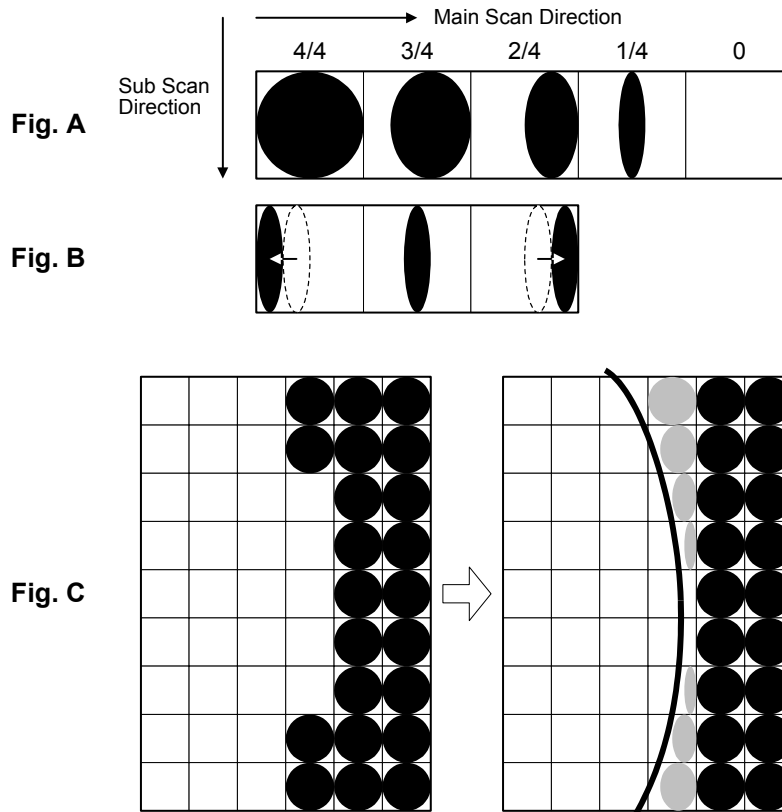
Line width correction is done in the GAVD chip on the LDD board.

The line width correction type can be selected with SP2-907.

6.5.6 VIDEO CONTROL UNIT (GAVD)

Fine Character and Image (FCI)

The FCI circuit performs image smoothing.



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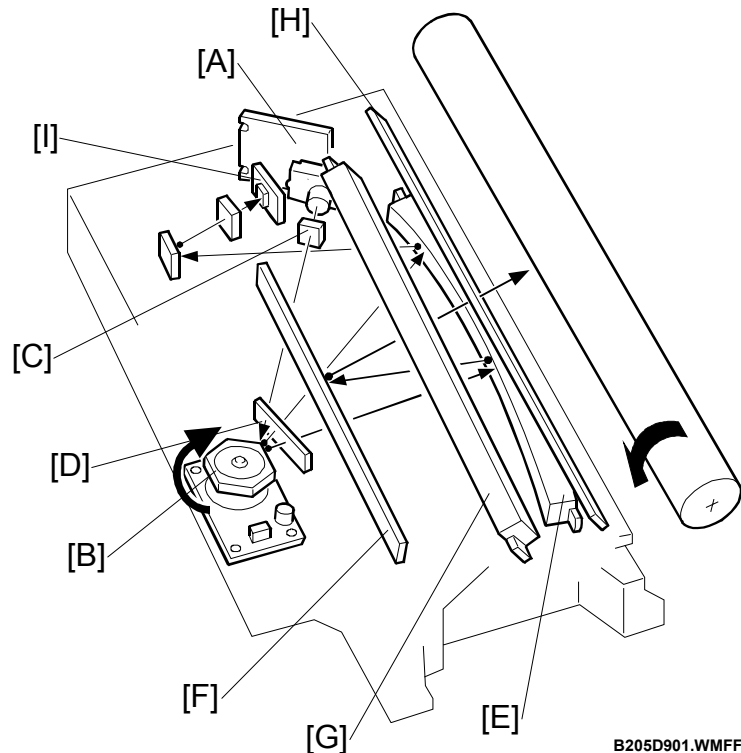
Usually, binary picture processing generates jagged edges on characters, as shown in the above illustration. These are reduced using edge smoothing. The FCI changes the laser pulse duration and position for certain pixels.

Fig. A shows the four possible pulse durations, and Fig. B shows how the laser pulse can be in one of three positions within the pixel. Fig. C shows an example of how edge smoothing is used.

This function only affects the received image for fax mode and for printer mode, even if copy mode is also using binary picture processing.

6.6 LASER EXPOSURE

6.6.1 OVERVIEW



The optical path from the laser diode to the drum is shown above.

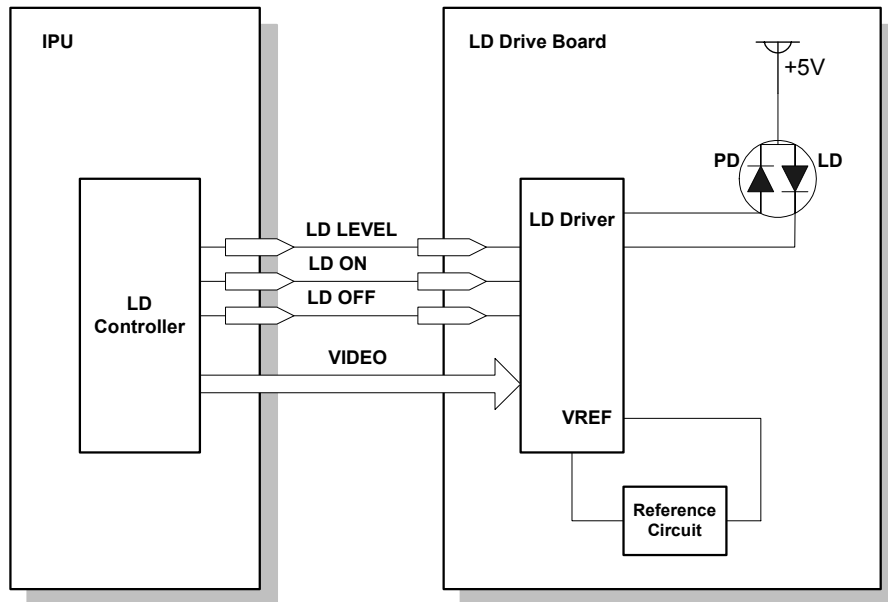
The LD unit [A] outputs a laser beam to the polygon mirror [B] through the cylindrical lens [C]. The shield glass [D] prevents dust from reaching the polygon mirror.

Each surface of the polygon mirror reflects one full main scan line. The laser beam goes to the F-theta mirror [E], mirror [F], and BTL (barrel toroidal lens) [G]. Then the laser beam goes to the drum through the toner shield glass [H].

The laser synchronizing detector [I] determines the main scan starting position.

The speed of the polygon mirror motor is 35,433 rpm for 600 dpi.

6.6.2 AUTO POWER CONTROL (APC)



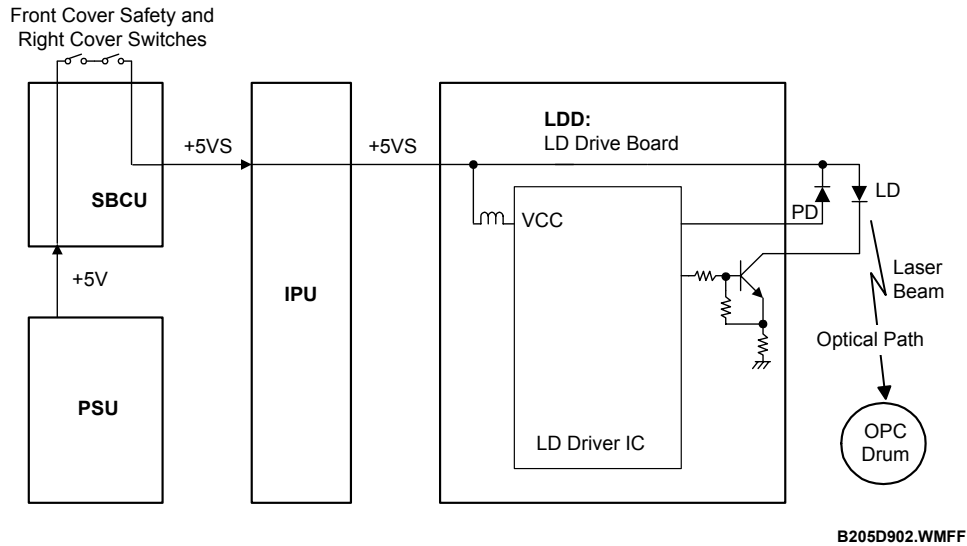
B205D510.WMFF

The LD driver IC drives the laser diode. To prevent the intensity of the laser beam from changing because of the temperature, the machine monitors the current passing through the laser diode (LD). The machine adjusts the current to the laser diode by comparing it with the reference level from the reference circuit. This auto power control is done just after the machine is turned on and during printing while the laser diode is active.

The laser diode power is adjusted on the production line.

NOTE: Do not touch the variable resistors on the LD unit in the field.

6.6.3 LD SAFETY SWITCH

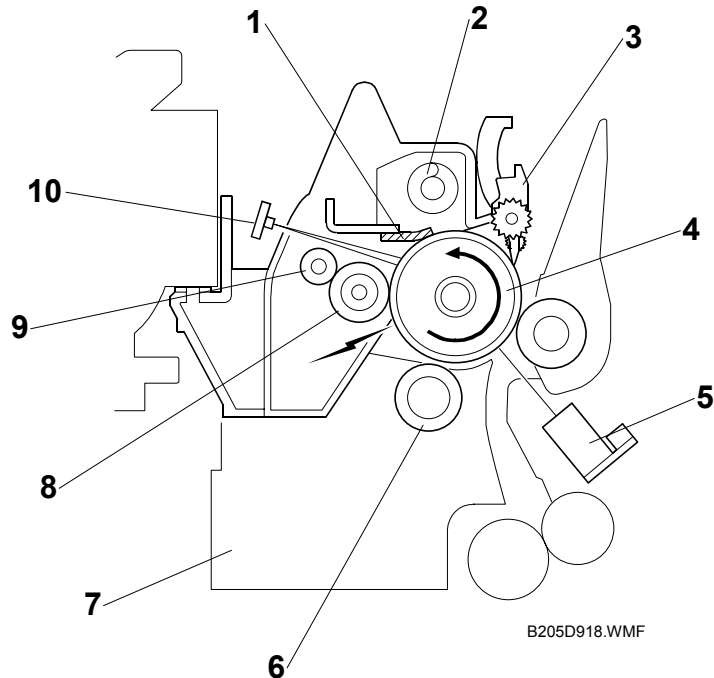


To ensure technician and user safety and to prevent the laser beam from inadvertently switching on during servicing, safety switches are located at the front and right covers. The switches are installed on the +5VLD line coming from the power supply unit through the SBCU and IPU boards.

When the front cover or the right cover is opened, the power supply to the laser diode is interrupted.

6.7 PHOTOCONDUCTOR UNIT (PCU)

6.7.1 OVERVIEW



The PCU consists of the components shown in the above illustration. An organic photoconductor (OPC) drum (diameter: 30 mm) is used in this machine.

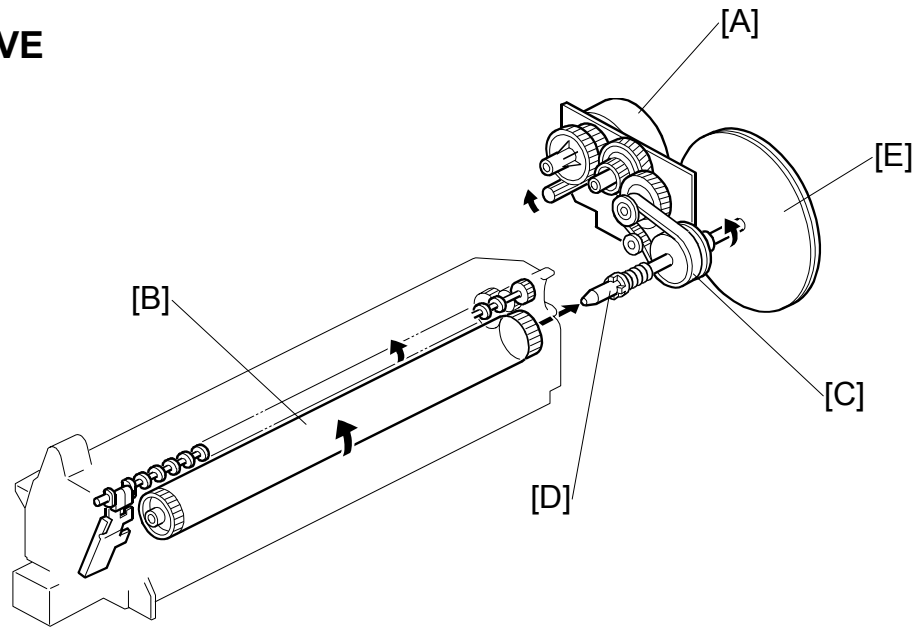
- | | |
|--------------------------|----------------------------------|
| 1. Cleaning Blade | 6. Development Roller |
| 2. Toner Collection Coil | 7. Development Unit |
| 3. Pick-off Pawl | 8. Charge Roller |
| 4. OPC Drum | 9. Charge Roller Cleaning Roller |
| 5. ID Sensor (see note) | 10. Quenching Lamp (see note) |

NOTE: These parts are not included in the PCU.

The machine informs the user when the PCU life has finished. However, the user can continue to make copies.

SP5-912 can be used to enable or disable this warning message, and to change the default replacement interval (the default is 60k).

6.7.2 DRIVE



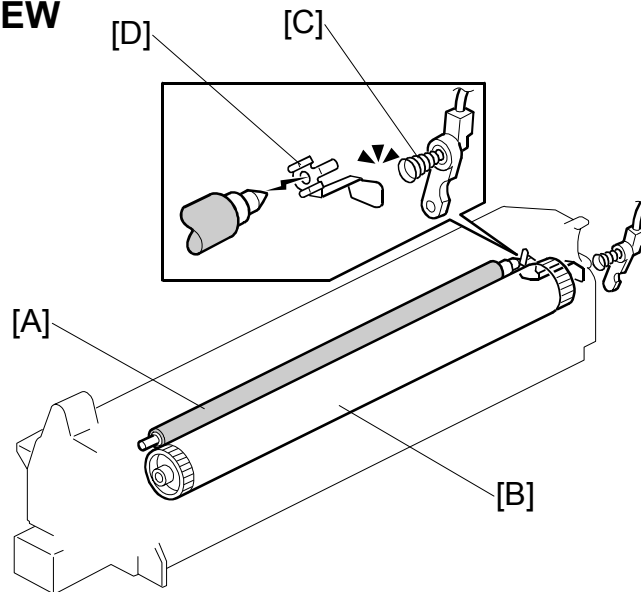
B205D920.WMF

The main motor [A] drives the drum [B] through a series of gears, a timing belt [C], and the drum drive shaft [D]. The main motor assembly includes a drive controller, which outputs a motor lock signal when the rotation speed is out of the specified range.

The fly-wheel [E] on the end of the drum drive shaft stabilizes the rotation speed (this prevents banding and jitter from appearing on copies).

6.8 DRUM CHARGE

6.8.1 OVERVIEW



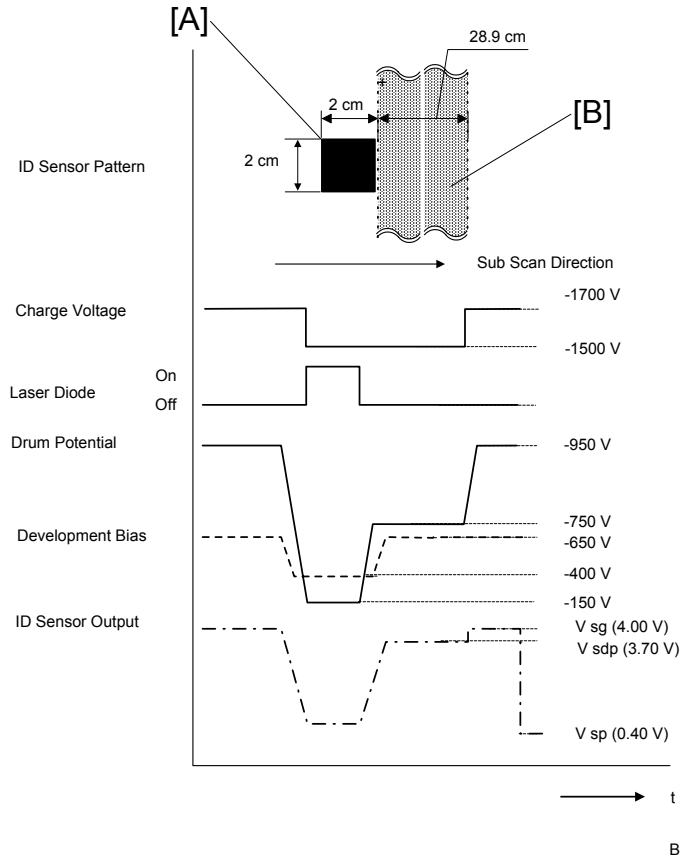
B205D921.WMF

This copier uses a drum charge roller to charge the drum. The drum charge roller [A] always contacts the surface of the drum [B] to give it a negative charge of – 900V.

The high voltage supply board gives a negative dc voltage to the drum charge roller through the spring [C] and terminal plate [D].

6.8.1 CHARGE ROLLER VOLTAGE CORRECTION

Correction for Environmental Conditions



With a drum charge roller system, the voltage transferred from roller to drum varies with the temperature and humidity around the drum charge roller. The lower the temperature or humidity is, the higher the applied voltage required.

To compensate, the machine uses the ID sensor to measure the effects of current environmental conditions. For this measurement, the process control parameters are balanced so that any small change in drum potential caused by environmental effects is reflected in a change in the amount of toner transferred to the drum.

This measurement is made immediately after the ID sensor pattern for toner density control. Immediately after making ID sensor pattern [A], the charge roller voltage stays on, but the development bias goes up to -650V; as a result the drum potential is reduced to -750V. The laser diode is not switched on, and the drum potential is now slightly higher than the development bias, so only a very small amount of toner transfers to the drum.

The ID sensor measures the density of this pattern [B], and the output voltage is known as Vsdp. This voltage is compared with Vsg (read from the bare drum at the same time).

If the humidity drops, the drum potential goes up (to a higher –ve voltage) even if the charge roller voltage supply stays the same (efficiency of voltage transfer is higher with lower humidity). As a result, less toner is transferred to ID sensor pattern [B]. If the sensor output reaches a certain point, the drum charge voltage will be reduced.

To determine whether to change the drum charge roller voltage, the machine compares Vsdp with Vsg.

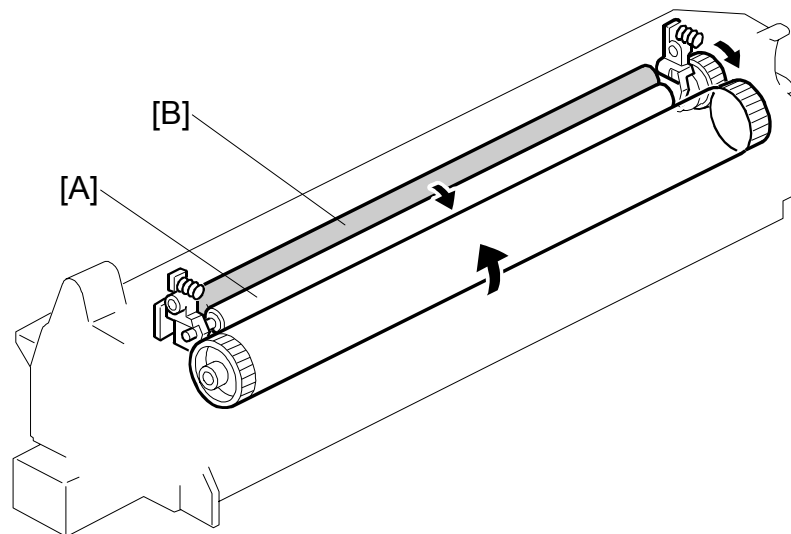
- $Vsdp / Vsg > 0.95$ = Reduce the magnitude of the drum charge voltage by 50 V
- $Vsdp / Vsg < 0.90$ = Increase the magnitude of the drum charge voltage by 50 V

6.8.2 ID SENSOR PATTERN PRODUCTION TIMING

The ID sensor pattern is made in the following conditions:

- When the machine is turned on or returns from the energy save mode and the hot roller temperature is less than 30°C. The temperature threshold can be adjusted with SP2995 001
- After the total number of prints exceeds 300 pages. If this total is exceeded during a job, the pattern is created at the completion of the job. This total can be changed with SP2995 002.

6.8.3 DRUM CHARGE ROLLER CLEANING

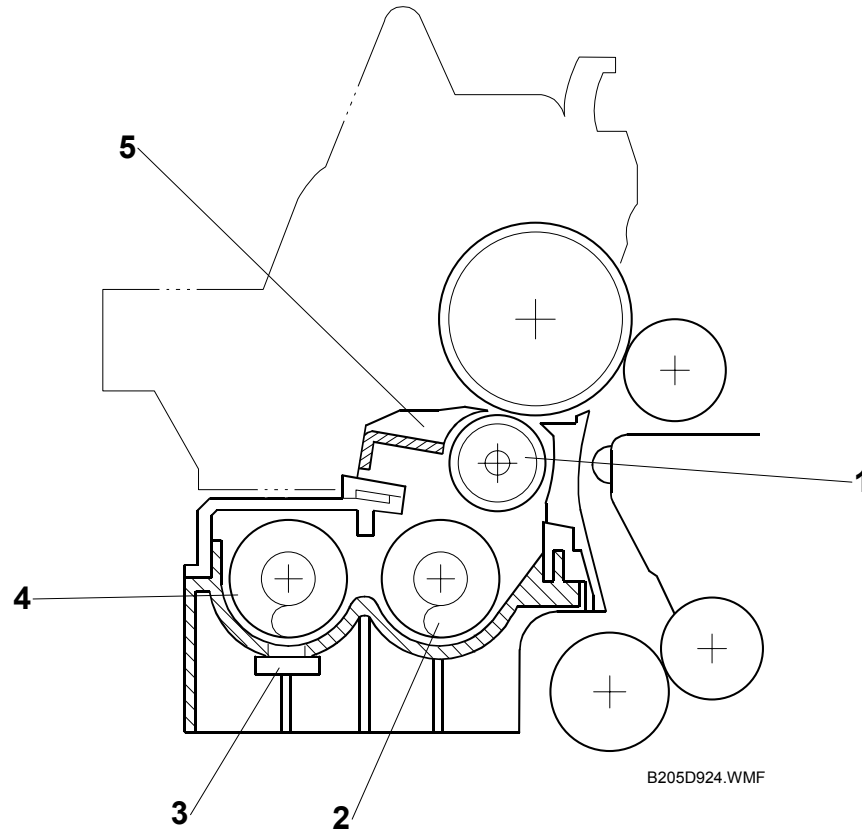


B205D923.WMF

Because the drum charge roller [A] always contacts the drum, it gets dirty easily. So, the charge roller cleaning roller [B] also contacts the drum charge roller all the time to clean the surface of the drum charge roller.

6.9 DEVELOPMENT

6.9.1 OVERVIEW

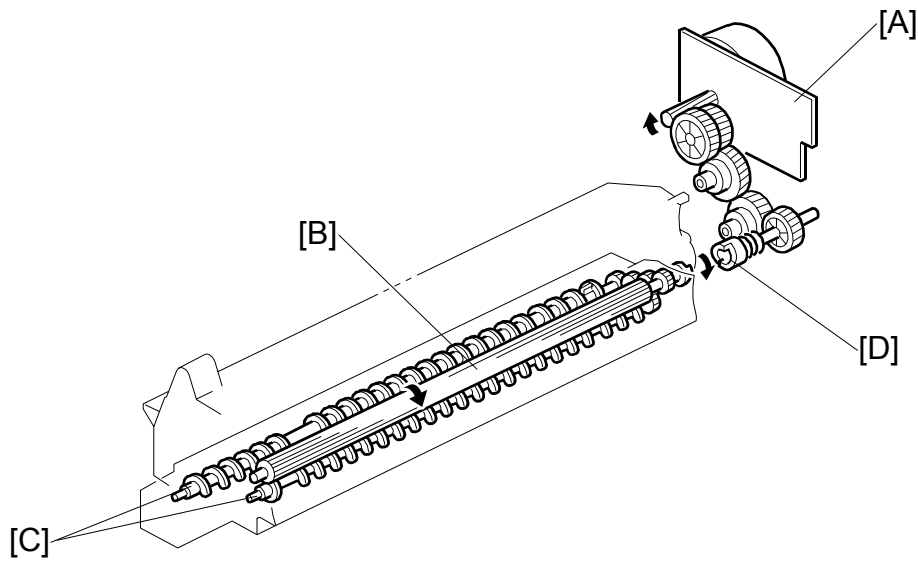


The development unit consists of the following parts.

- | | |
|-----------------------|-------------------|
| 1. Development roller | 4. Mixing auger 1 |
| 2. Mixing auger 2 | 5. Doctor blade |
| 3. TD sensor | |

This machine uses a single-roller development system. Two mixing augers mix the developer. The toner density (TD) sensor and image density (ID) sensor (see the illustration in the PCU section) are used to control toner density.

6.9.2 DRIVE

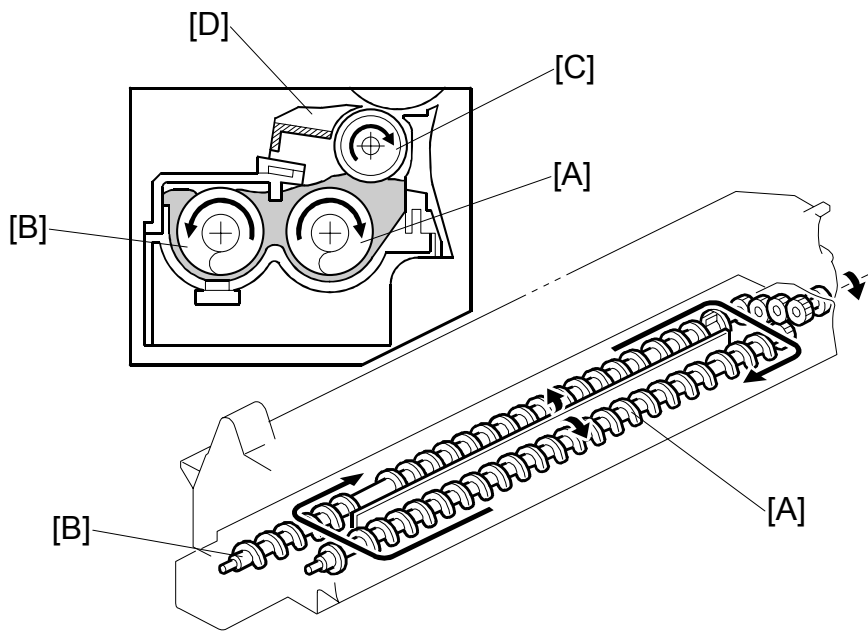


B205D925.WMF

The main motor [A] drives the development roller [B] and mixing augers [C] through a train of gears and the development drive shaft [D]. When the PCU is pushed in, the development drive shaft engages the development roller gear.

The development drive gears (except for the gears in the development unit) are helical gears. These gears are quieter than normal gears.

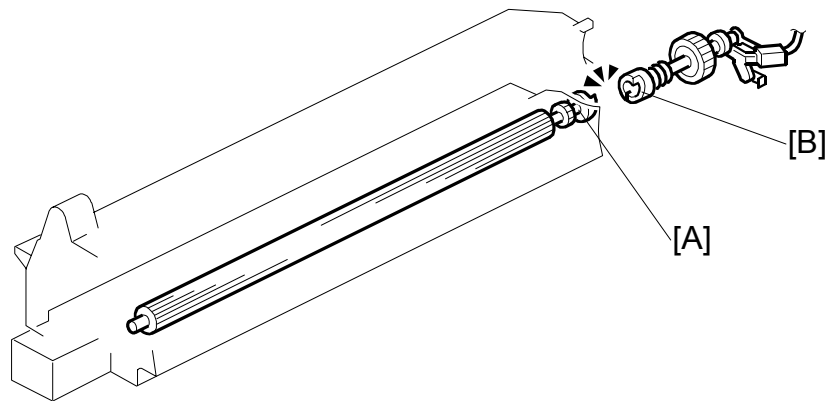
6.9.3 DEVELOPER MIXING



B205D927.WMF

This copier uses 2 mixing augers, [A] and [B], to keep the developer evenly mixed. Mixing auger 2 [A] transports excess developer, scraped off the development roller [C] by the doctor blade [D], towards the front of the machine. Mixing auger 1 [B] returns the excess developer, along with new toner, to the rear of the mixing assembly. Here the developer is reapplied to the development roller.

6.9.4 DEVELOPMENT BIAS



B205D928.WMF

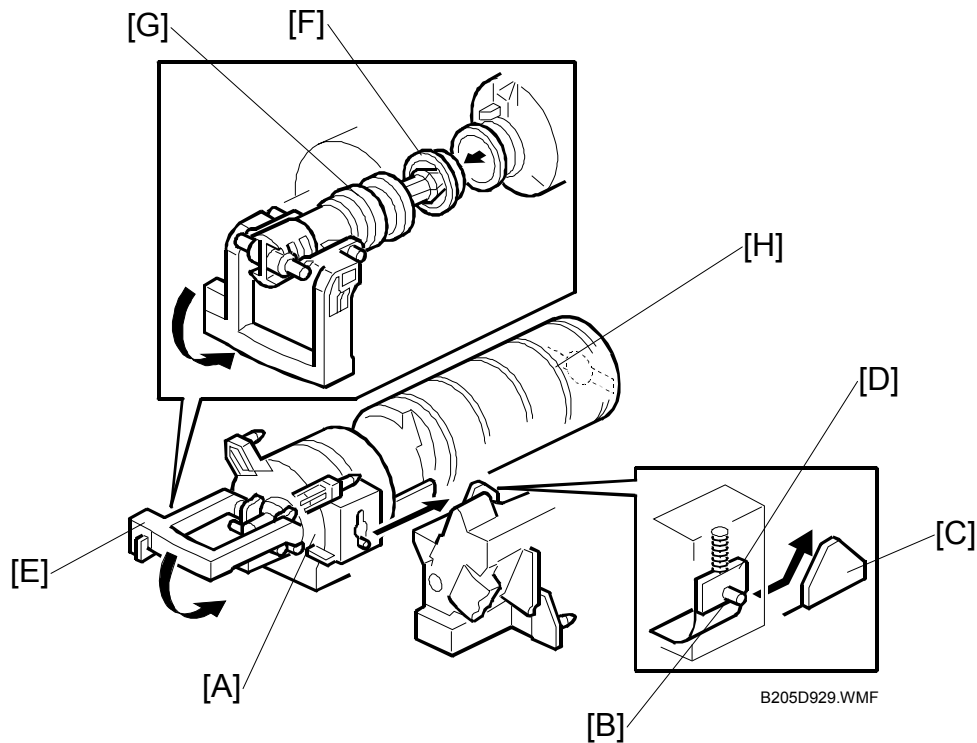
This machine uses a negative-positive development system, in which black areas of the latent image are at a low negative charge (about -150 ± 50 V) and white areas are at a high negative charge (about -950 V).

To attract negatively charged toner to the black areas of the latent image on the drum, the high voltage supply board applies a bias of -650 volts to the development rollers throughout the image development process. The bias is applied to the development roller shaft [A] through the drive shaft [B].

The development bias voltage (-650 V) can be adjusted with SP2-201-1.

6.9.5 TONER SUPPLY

Toner bottle replenishment mechanism

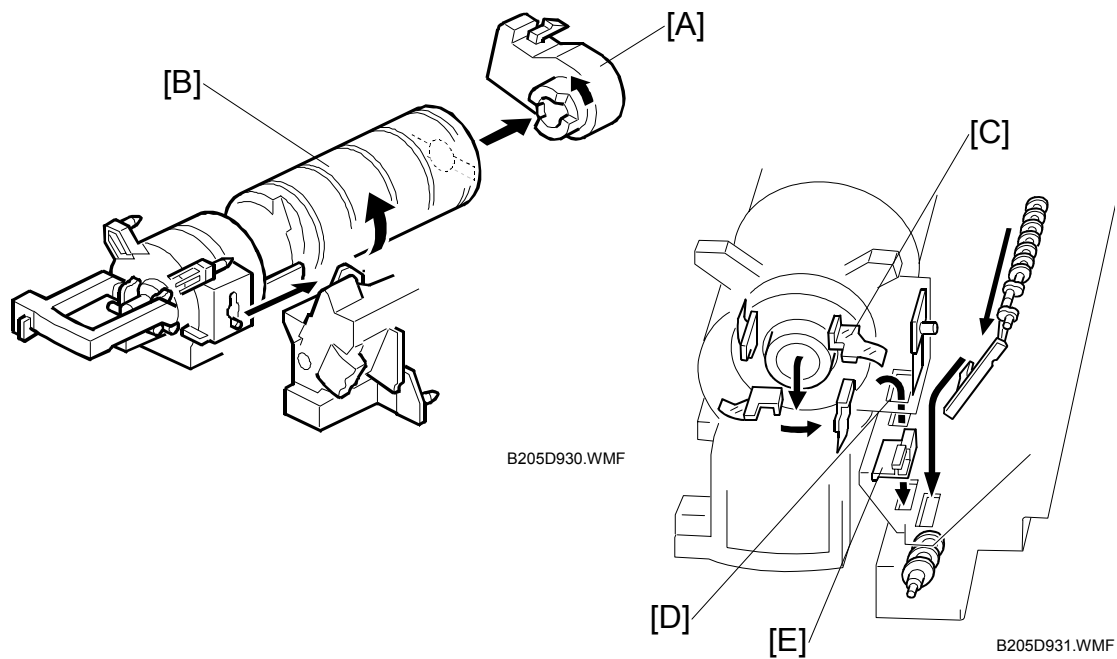


When a toner bottle is placed in the bottle holder unit [A] and the unit is pushed in completely, pin [B] moves against the side [C] of the PCU, and the toner shutter [D] is pulled out to open the bottle. When the toner bottle holder lever [E] is put back in the original position, the cap [F] on the toner bottle is pulled away and kept in place by the chuck [G].

The toner supply mechanism transports toner from the bottle to the development unit. The toner bottle has a spiral groove [H] that helps move toner to the development unit.

When the bottle holder unit is pulled out to add a new toner bottle, the following happens automatically to prevent toner from scattering.

- The chuck releases the toner bottle cap into its proper position.
- The toner shutter shuts to block the opening as a result of pressure from a spring.

Toner supply mechanism

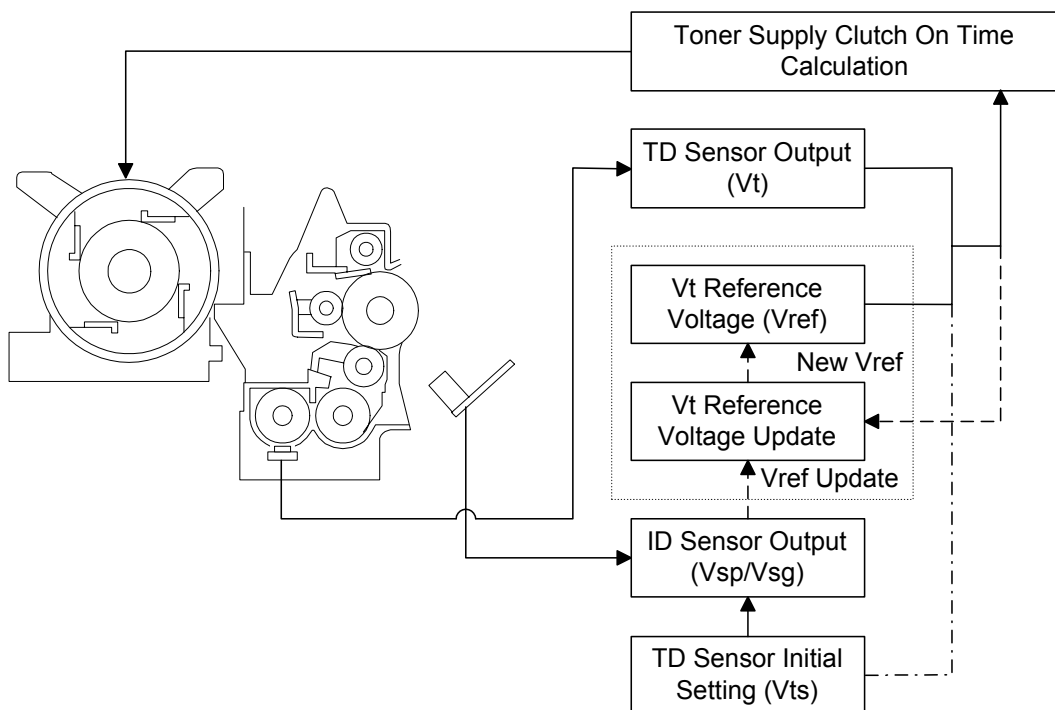
The toner supply motor [A] drives the toner bottle [B] and the mylar blades [C]. First, the toner falls down into the toner bottle holder. The toner supply mylar blades transfer the toner to the slit [D]. When the PCU is installed in the machine, the shutter [E] above the PCU is opened by the machine frame. Then the toner falls down into the development unit through the slit and the shutter.

6.9.6 TONER DENSITY CONTROL

Overview

There are four modes for controlling toner supply as shown in the following tables. The mode can be changed with by SP2-921. The factory setting is sensor control 1 mode.

Basically, toner density is controlled using the standard TD sensor voltage (V_t), toner supply reference voltage (V_{ref}), actual TD sensor output voltage (V_t), and ID sensor output data (V_{sp}/V_{sg}).



B205D932.WMF

There are five toner density control modes as follows.

Mode	Sensor control 1 (SP2-921, "0"): Normally use this setting only
Toner supply decision	Compare V_t with a reference voltage (V_{ts} or V_{ref})
Toner control process	Toner is supplied to the development unit when V_t is higher than the reference voltage (V_{ts} or V_{ref}). This mode keeps the V_{ref} value for use the next toner density control. V_{ts} is used for the first toner density control after a new PCU has been installed, until it has been corrected with the ID sensor output. V_{ref} is used after V_{ts} has been corrected with the ID sensor output voltage (corrected during the first toner density control for a new PCU).
Toner supply amount	Varies
Toner end detection	Performed

Mode	Sensor control 2 (SP2-921, "1"): For designer's use only; do not use in the field
Toner supply decision	Compare V_t with a reference voltage (V_{ts} or V_{ref})
Toner control process	This toner control process is the same as sensor control 1 mode. However, the reference voltage is always the same as V_{ref} .
Toner supply amount	Varies
Toner end detection	Performed

Mode	Fixed control 1 (SP2-921, "2"): For designer's use only; do not use in the field
Toner supply decision	Compare V_t with a reference voltage (V_{ts} or V_{ref})
Toner control process	This toner control process is the same as sensor control 1 mode.
Toner supply amount	Fixed (SP2-925)
Toner end detection	Performed

Mode	Fixed control 2 (SP2-921, "3"): Use temporarily if the TD sensor needs to be replaced
Toner supply decision	None
Toner control process	Toner is supplied every printed page regardless of V_t .
Toner supply amount	Fixed (SP2-925)
Toner end detection	Not performed

Mode	Sensor control 3 (SP921, "4". DFU)
Toner supply decision	Compare V_t with a reference voltage (V_{ts})
Toner control process	This toner control process is the same as sensor control 1 mode. However, the reference voltage used is always V_{ts} .
Toner supply amount	Varies
Toner end detection	Performed.

Toner density sensor initial setting

The TD sensor initial setting procedure is done by SP2801. During TD sensor initial setting, the TD sensor is set so that the TD sensor output to the value of SP2-926 (default: 2.5V). This value will be used as the standard reference voltage (Vts) of the TD sensor.

Toner density measurement

Toner density in the developer is detected once every copy cycle. The sensor output voltage (Vt) during the detection cycle is compared with the standard reference voltage (Vts) or the toner supply reference voltage (Vref).

Vsp/Vsg detection

The ID sensor detects the following voltages.

- Vsg: The ID sensor output when checking the drum surface
- Vsp: The ID sensor output when checking the ID sensor pattern
- At the end of a job, if an ID sensor pattern has not been made for a certain number of sheets (default: 0 sheets = disabled)

The number of sheets can be changed using SP2-995-2.

In this way, the reflectivity of both the drum surface and the pattern on the drum are checked. This compensates for any variations in the reflectivity of the pattern on the drum or the reflectivity of the drum surface.

The ID sensor pattern is made on the drum by charge roller and laser diode.

Vsp/Vsg is not detected every page or job; it is detected at the following times to decide Vref:

- When the machine is turned on or returns from the energy save mode and the hot roller temperature is less than 30°C. The temperature threshold can be adjusted with SP2995 001
- After the total number of prints exceeds 300 pages. If this total is exceeded during a job, the pattern is created at the completion of the job. This total can be changed with SP2995 002.

The 30-minute interval can be changed using SP2-995.

Toner supply reference voltage (Vref) determination

The toner supply reference voltage (Vref) is the threshold voltage for the toner supply determination. Vref is determined using the following data:

- ID sensor output (Vsp/Vsg)
- (Vts or the current Vref) - Vt

Toner supply determination

The reference voltage (Vts or Vref) is the threshold voltage for determining whether or not to supply toner. If Vt becomes greater than the reference voltage, the machine supplies additional toner.

Toner Supply Motor On Time Determinations

For fixed control mode, the toner supply motor on time is specified by the setting of SP2-925, and does not vary. The default setting is 200 ms for each copy. The toner supply motor on time for each value of SP2-925 is as follows.

Value of SP2-925	Motor On Time (t = 200 ms)
0	t
1	2t
2	4t
3	8t
4	12t
5	16t
6	Continuously
7	Not supplied

For sensor control modes 1 and 2, the toner supply motor on time is decided by the following factors.

- $\Delta V_t (= V_t - (V_{ref} \text{ or } V_{ts}))$
- TD sensor sensitivity (coefficient: S, value is 0.3)

There are seven levels for toner supply motor on time as shown below.

Level	Decision	Motor On Time (seconds)
1	$0 < \Delta V_t \leq S/16$	t (0.6)
2	$S/16 < \Delta V_t \leq S/8$	t x 2 (1.2)
3	$S/8 < \Delta V_t \leq S/4$	t x 4 (2.4)
4	$S/4 < \Delta V_t \leq S/2$	t x 8 (4.8)
5	$S/2 < \Delta V_t \leq 4S/5$	t x 16 (9.6)
6	$4S/5 < \Delta V_t \leq S$ (near-end)	T (30); see note 3
7	$S < \Delta V_t$ (toner end)	T (30); see note 3

- NOTE:**
- 1) The value of "t" can be changed using SP2-922 (default: 0.6 second)
 - 2) The value of "T" can be changed using SP2-923 (default: 30 seconds)
 - 3) T (30) means that toner is supplied intermittently in a half duty cycle (1.5 s on, 1.5 s off) for 30 seconds

6.9.7 TONER SUPPLY IN ABNORMAL SENSOR CONDITIONS

ID sensor

Readings are abnormal if any of the following conditions occur:

- $V_{sg} \leq 2.5V$
- $V_{sg} < 3.5V$ when maximum power (254) is applied
- $V_{sp} \geq 2.5V$
- $(V_{sg} - V_{sp}) < 1.0V$
- ID sensor power required to make the standard output reaches the maximum value (254)

The above ID sensor values can be checked using SP2-220.

When this is detected, the machine changes the value of V_{ref} to the previous value then does the toner density control process (in a similar way to sensor control mode 2).

No SC code is generated if the ID sensor is defective.

TD Sensor

The TD sensor is checked every copy. If the readings from TD sensor become abnormal, the machine changes the toner density control mode to fixed supply mode 2, and the toner supply amount per page is always 200 ms, regardless of the value of SP2-925. Then at the end of a job (if the optional fax unit is installed), or 100 copies after the TD sensor error was detected (if no fax unit is installed), an SC code is generated (SC390) and the machine must be repaired. The 100-copy threshold can be adjusted with SP 2-992.

6.9.8 TONER NEAR END/END DETECTION AND RECOVERY

The toner near end and end conditions are detected using the V_t and V_{ref} values, in a similar way to toner density control.

This is done in all toner supply modes except for fixed mode 2, when toner end is not detected.

Toner Near End Detection

If V_t is at level 6 (see the table on the previous page) five times consecutively, the machine enters the toner near end condition and the toner end indicator starts blinking. Then the machine supplies toner for a certain time, which depends on the setting of SP 2-923 (see the previous page).

Toner Near End Recovery

If the machine detects " $S/2 < \Delta V_t \leq 4S/5$ " twice consecutively when in one of the following situations, the machine leaves the toner near end condition.

- While in the toner recovery cycle (supplying toner on and off for 30 s – see the previous page) after the machine has detected a toner near end condition.
- During copying in the toner near end condition.
- If the front cover is opened and closed for more than 10 seconds while a toner near end condition exists.

Toner End Detection

There are two situations for entering the toner end condition.

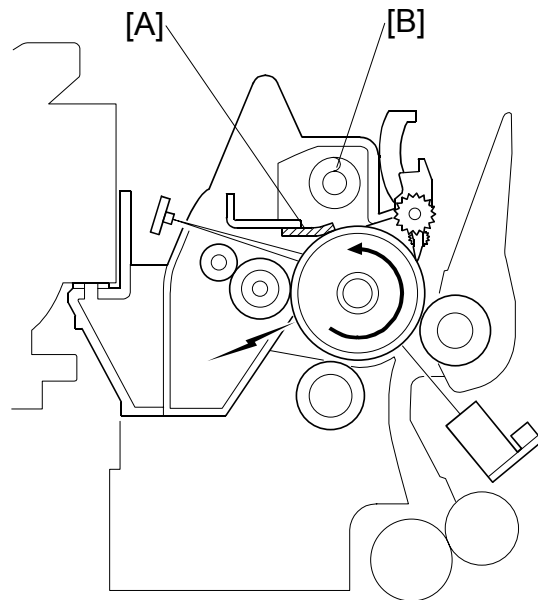
- When V_t is level 7 three times consecutively, the machine enters the toner end condition.
- When " $4S/5 < \Delta V_t \leq S$ " is detected in the toner near end condition, then 50 copies can be made after this condition (the number of copies between this condition and toner end can be changed using SP2-213).

Toner End Recovery

If the front cover is opened and closed for 10 seconds while a toner end condition exists and the toner bottle is replaced, the machine attempts to recover using the same procedure as for toner near end/end detection.

6.10 DRUM CLEANING AND TONER RECYCLING

6.10.1 DRUM CLEANING



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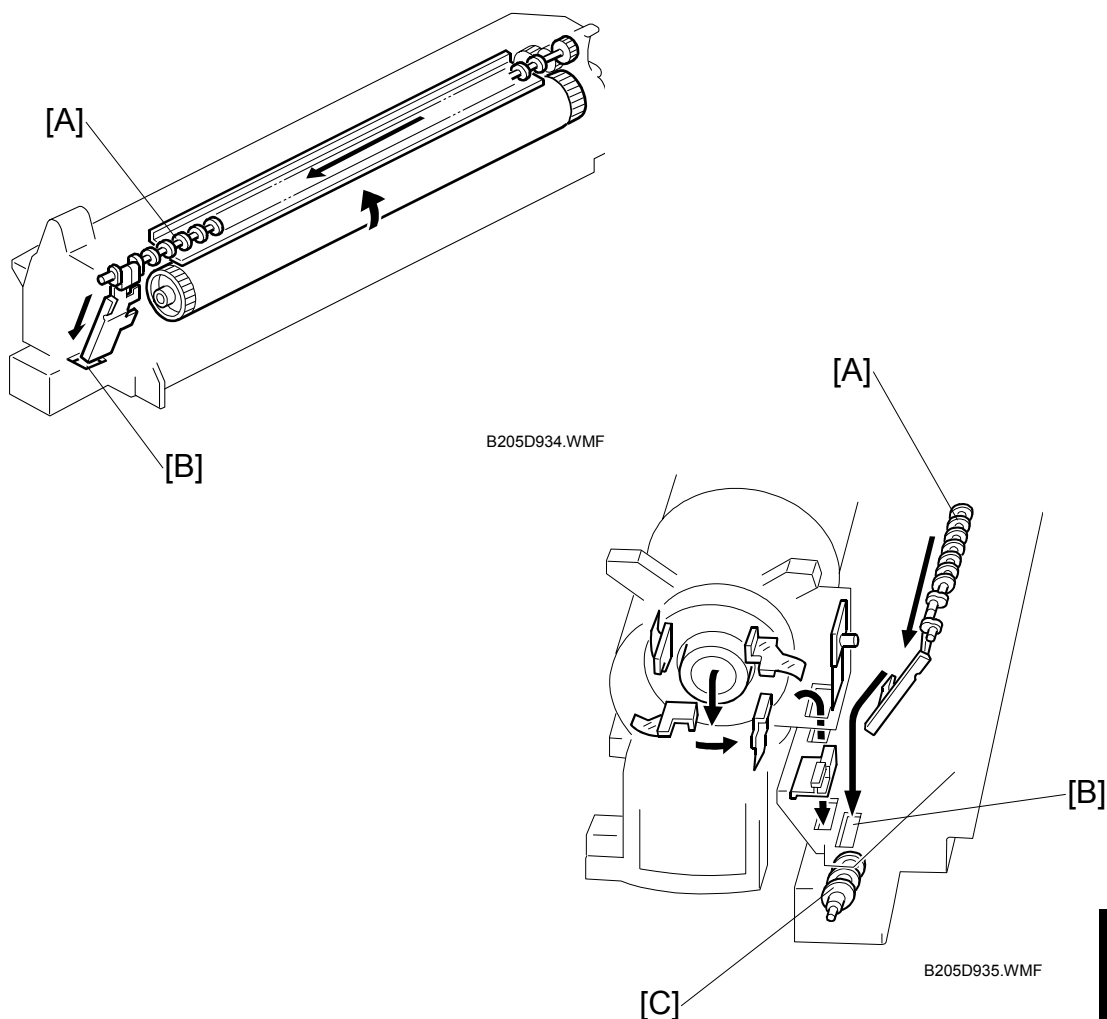
The cleaning blade [A] removes any toner remaining on the drum after the image is transferred to the paper. This model uses a counter blade system.

The cleaning blade scrapes off toner remaining on the drum. When toner builds up in the cleaning unit, toner at the top of the pile is removed by the toner collection coil [B].

To remove the toner and other particles that are accumulated at the edge of the cleaning blade, the drum turns in reverse for about 5 mm at the end of every copy job. This feature is controlled with SP 2-998.

In addition, cleaning is done in the middle of a job if 100 sheets have been made since the previous cleaning. This feature is controlled with SP 2-211.

6.10.2 TONER RECYCLING

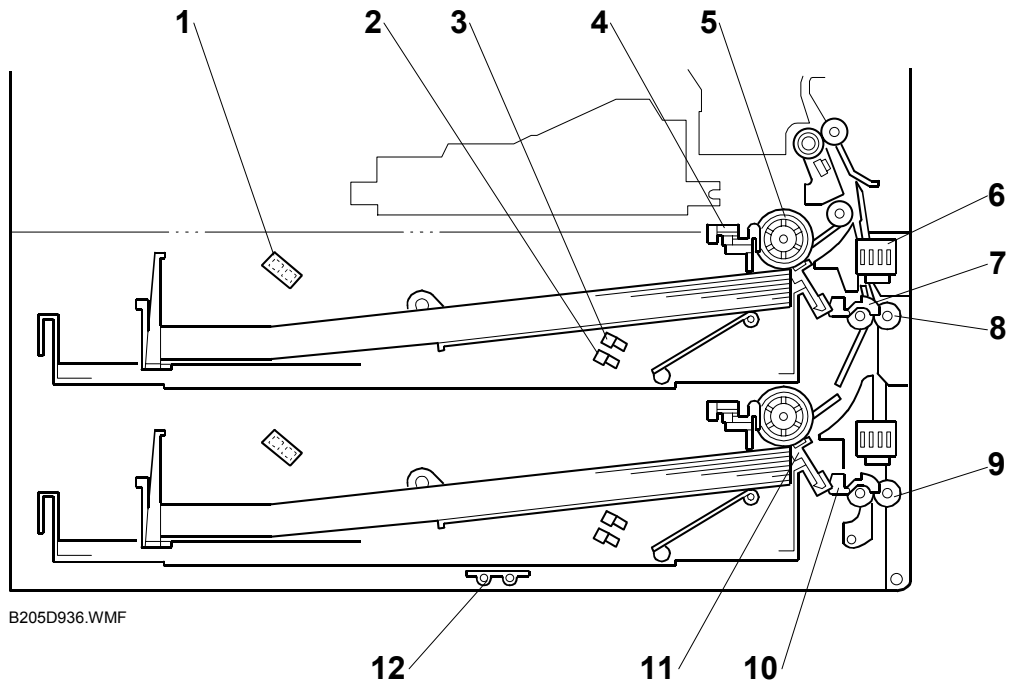


Toner picked up by the toner collection coil [A], is transported to the opening [B] in the side of the PCU. Then, this toner falls into the development unit with new toner coming from the toner bottle and it is all mixed together by mixing auger 1 [C] and used again.

Detailed
Descriptions

6.11 PAPER FEED

6.11.1 OVERVIEW



There are two paper trays, each of which can hold 500 sheets.

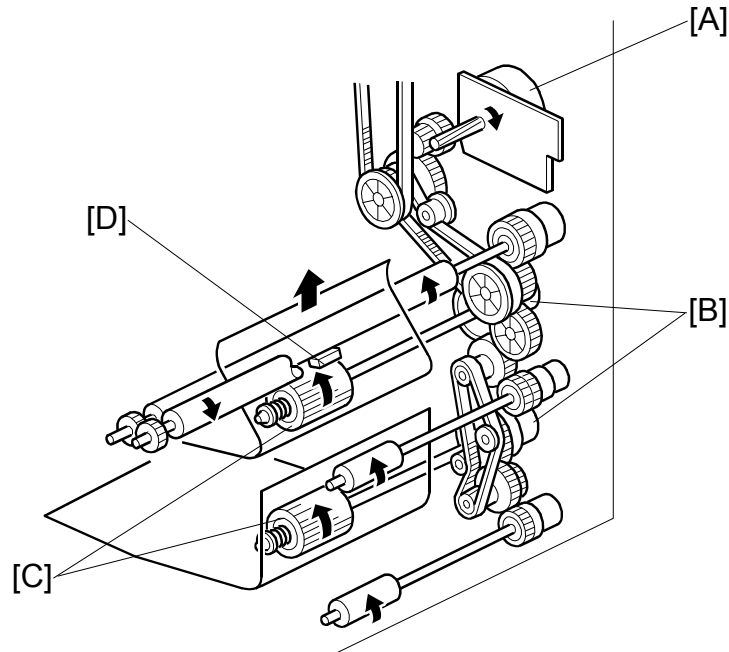
The paper tray feed stations use a friction pad system.

The two relay sensors are used for paper jam detection.

The components of the paper feed station are as follows.

- | | |
|---------------------------|--------------------------|
| 1. Paper Lift Sensor | 7. Upper Relay Sensor |
| 2. Paper Height -1 Sensor | 8. Upper Relay Roller |
| 3. Paper Height -2 Sensor | 9. Lower Relay Roller |
| 4. Paper End Sensor | 10. Lower Relay Sensor |
| 5. Paper Feed Roller | 11. Friction Pad |
| 6. Paper Size Sensor | 12. Tray Heater (Option) |

6.11.2 PAPER FEED DRIVE MECHANISM



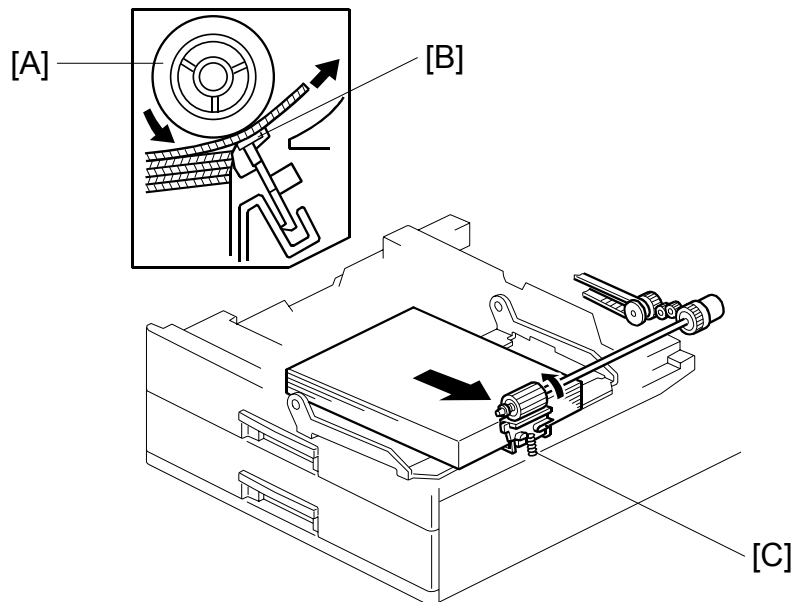
B205D937.WMF

The main motor [A] drives the pick-up and feed mechanism of both the first and second paper trays. The paper feed clutches [B] transfer drive from this motor to the paper feed rollers [C].

When the paper feed clutch turns on, the feed rollers start to feed the paper. The paper feed clutch stays on until shortly after the registration sensor [D] has been activated.

Detailed
Descriptions

6.11.3 PAPER FEED AND SEPARATION MECHANISM

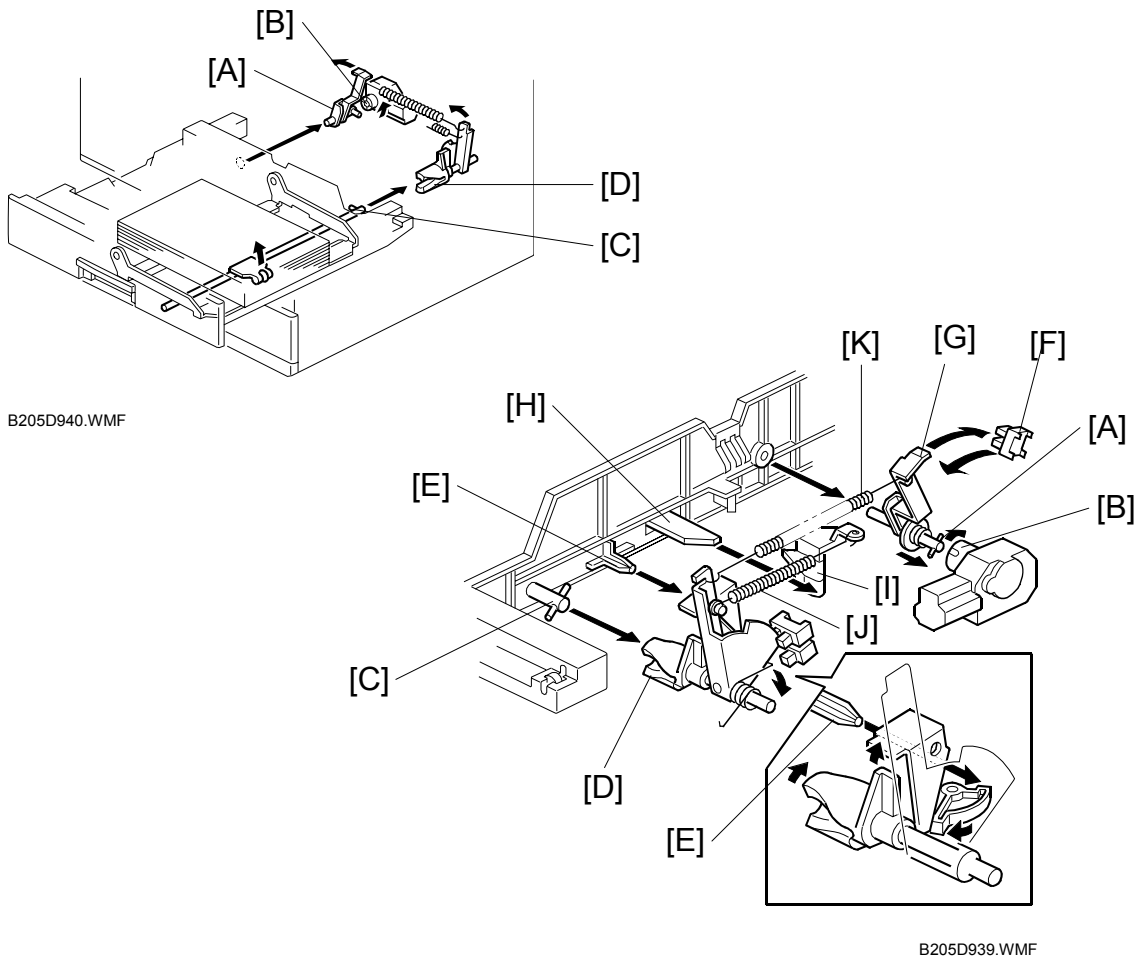


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The paper feed roller [A] drives the top sheet of paper from the paper tray to the copier. The friction pad [B] allows only one sheet to feed at a time. The friction pad applies pressure to the feed roller with a spring [C].

The friction pad pressure cannot be adjusted.

6.11.4 PAPER LIFT MECHANISM



The paper size switch detects when the tray is pushed in.

When the paper tray is pushed into the machine, the pin [A] for the lift motor pressure shaft engages the lift motor coupling [B] and the pin [C] for the bottom plate lift shaft in the tray engages the bottom plate pressure lever coupling [D]. The pin [E] on the rear of the tray pushes the lock lever so that the lift motor can lift the bottom plate pressure lever.

The lift motor turns on, and turns clockwise as shown in the diagram. The main pressure spring [K] pulls the bottom plate pressure lever, and this lifts the tray bottom plate.

When the top of the stack touches the feed roller, the motor cannot pull up the plate any more, so it pulls the actuator [G] into the lift sensor [F]. Then the lift motor stops.

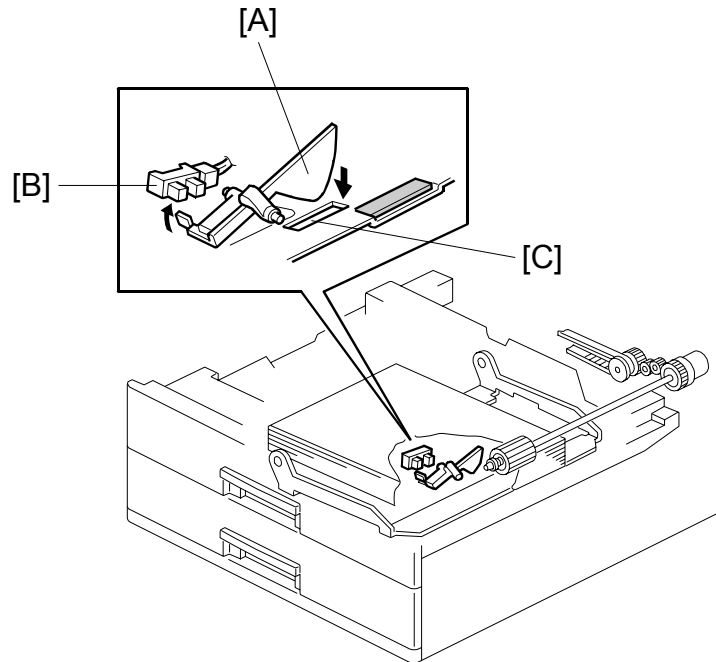
The pressure of the feed roller on the paper is now too high, so the lift motor reverses a certain time (200 ms or 600 ms), depending on the paper size, to reduce this pressure. For smaller paper, it reverses the larger amount (600 ms) to reduce the pressure more.

NOTE: The relationship between the bottom plate pressure adjustment, paper size thresholds, and the related SP modes is explained in “Bottom Plate Pressure Adjustment for Paper Size”.

For A4-width paper or wider, a projection [H] on the side fence engages the secondary pressure spring [J] through a lever [I]. Then, the secondary pressure spring [J] applies paper feed pressure in addition to the main pressure spring [K], to ensure that extra pressure is applied to wider paper.

When the paper tray is pulled out, the pins [A, C] disengage from the couplings [B, D], and the bottom plate drops. To make it easier to push the tray in, the lift motor rotates backwards 1.7 seconds to return the bottom plate pressure lever coupling [D] to the original position. The amount of reverse can be adjusted with SP 1-912.

6.11.5 PAPER END DETECTION



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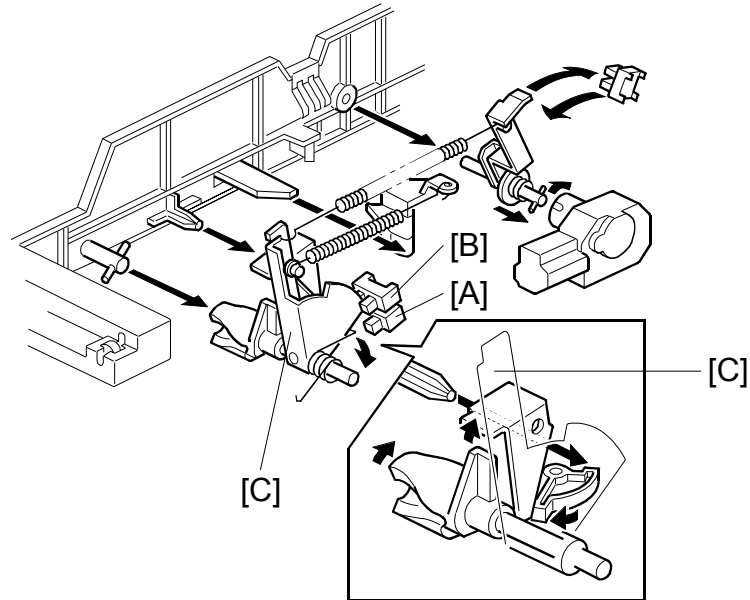
If there is some paper in the paper tray, the paper stack raises the paper end feeler [A] and the paper end sensor [B] is deactivated.

When the paper tray runs out of paper, the paper end feeler drops into the cutout [C] in the tray bottom plate and the paper end sensor is activated.

When the paper tray is drawn out with no paper in the tray, the shape of the paper end feeler causes it to lift up.

Detailed
Descriptions

6.11.6 PAPER HEIGHT DETECTION



B205D942.WMF

The amount of paper in the tray is detected by the combination of on/off signals from two paper height sensors [A] and [B]. The paper amount is displayed on the LCD.

When the amount of paper decreases, the bottom plate pressure lever [C] moves the actuator up.

The following combination of sensor signals is sent to the copier.

Amount of Paper	Paper Height Sensor 1	Paper Height Sensor 2
Near End	OFF	ON
30%	ON	ON
70%	ON	OFF
100%	OFF	OFF

When the tray contains paper of a small width, the paper feed pressure may become too low when the thickness of the remaining stack of paper has decreased. The lift motor rotates forward 400 ms after the sensor detects a certain amount of paper remaining in the tray to increase paper feed pressure, simulating the pressure generated by a full tray.

NOTE: The relationship between the bottom plate re-adjustment timing, paper size threshold, and the related SP modes is explained in “Bottom Plate Pressure Adjustment for Paper Size”.

6.11.7 FEED PRESSURE ADJUSTMENT FOR PAPER SIZE

Overview

For the friction pad system, the pressure from the top of the stack against the feed roller is very important for paper feed quality from the paper tray. If the pressure is high, double feed may occur. On the other hand, if the pressure is low, non-feed may occur. Because of this, the pressure must be varied depending on the paper size, paper weight, and amount of paper remaining in the tray. To achieve this, the pressure for each paper tray can be adjusted using SP mode.

Paper Size Thresholds

The upward pressure from the bottom plate spring is always the same. However, downward pressure from the stack on the bottom plate depends on the paper size. Because of this, for a smaller paper size, the pressure of the top of the stack against the feed roller is more than normal (because of the smaller downward pressure from the stack), so adjustment may be necessary.

Using the following SP modes, either two or three paper size ranges can be specified. Using other SP modes (explained later), the pressure can be adjusted separately for each of these ranges to deal with any feed problems that have been occurring.

Paper Size	Normal	Small Size	Middle Size
	Greater than HLT/A5 (default setting)	HLT/A5 or smaller (default setting)	None (default setting)
1st paper tray	---	SP1908-8	SP1908-9
2nd paper tray	---	SP1909-8	SP1909-9
3rd paper tray	---	SP1910-8	SP1910-9
4th paper tray	---	SP1911-8	SP1911-9

Paper Size Ranges: For Three Size Ranges

Small paper size range: Paper sizes equal to the 'Small' SP mode value, or smaller.

Middle paper size range: Paper sizes greater than the small paper size, up to and including the middle paper size specified by the 'Middle' SP mode.

Normal paper size range: Paper sizes greater than the 'Middle' SP mode.

Paper Size Ranges: For Two Size Ranges

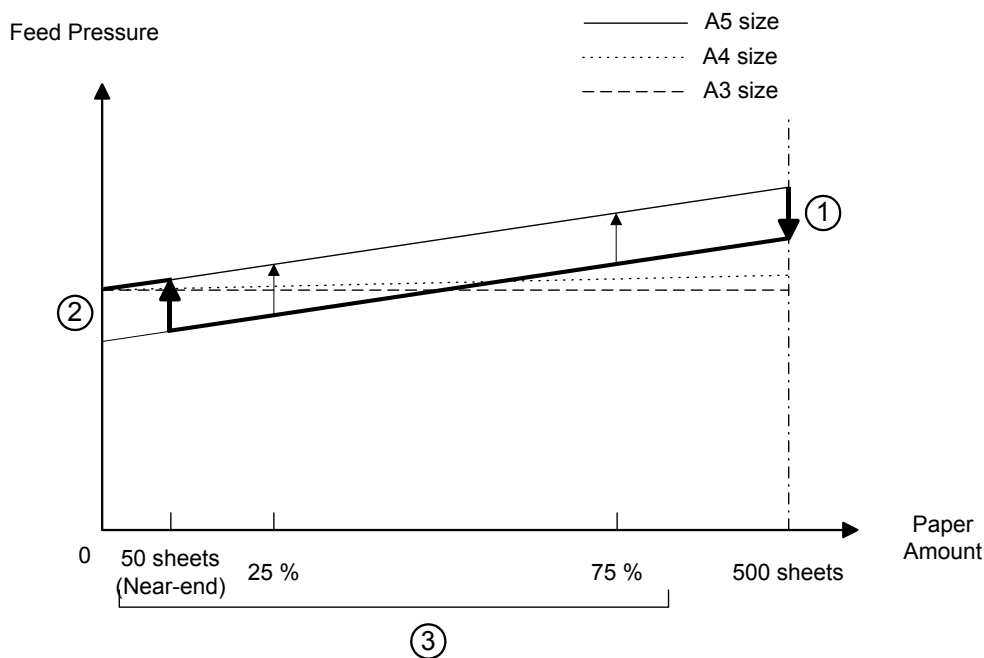
Small paper size range: Paper sizes equal to the 'Small' SP mode value, or smaller.

Normal paper size range: Paper sizes greater than the 'Small' SP mode.

Feed Pressure Adjustment

The pressure can be adjusted to solve a paper feed problem. This adjusts the amount of lift motor reverse just after the lift sensor is activated when lifting the stack to the paper feed position. To apply less pressure to the top of the stack, the amount of reverse should be increased.

Effect of the Amount of Remaining Paper



B205D943.WMF

From tray full to paper near-end

The pressure between the top of the stack and the fed roller also depends on the amount of remaining paper, especially for small paper sizes, as shown in the above graph. The pressure for A5 changes significantly between stack heights of 500 sheets and 50 sheets, but not much for A4 or A3 paper.

For 500 sheets of A5, the pressure is too high. To counter this, the lift motor reverses 600 ms (① in the graph), as explained in the previous section. The SP modes in the following table are for solving feed problems that occur when the tray is between full and near-end.

Paper Size	Normal	Small Size	Middle Size
	Greater than HLT/A5 (default setting)	HLT/A5 or smaller (default setting)	None (default setting)
1st paper tray	SP1908-1	SP1908-2	SP1908-3
2nd paper tray	SP1909-1	SP1909-2	SP1909-3
3rd paper tray	SP1910-1	SP1910-2	SP1910-3
4th paper tray	SP1911-1	SP1911-2	SP1911-3
Default (all trays)	200 ms	600 ms	200 ms (default: not used)

From paper near end to paper end

When paper is used up, the pressure on the bottom plate reduces, so the upward pressure increases, causing the pressure of the feed roller against the top of the stack to increase.

However, for small paper sizes, because of the previous correction (600 ms reverse rotation of the lift motor), the pressure between the feed roller and the top of the stack becomes too small at some point as paper is used up, and this could cause paper feed problems. This condition is more significant for smaller paper sizes, such as A5, as shown in the diagram.

If a paper feed problem occurs when the stack is partly used up, the pressure can be re-adjusted (② in the graph) using the following SP modes. The default is set for 50 sheets (at the near-end point)

The lift motor rotates forward for the time specified by the SP mode to increase the pressure.

Paper Size	Small Size	Middle Size
	HLT/A5 or smaller (default setting)	None (default setting)
1st paper tray	SP1908-4	SP1908-5
2nd paper tray	SP1909-4	SP1909-5
3rd paper tray	SP1910-4	SP1910-5
4th paper tray	SP1911-4	SP1911-5
Default (all trays)	400 ms	300 ms (default: not used)

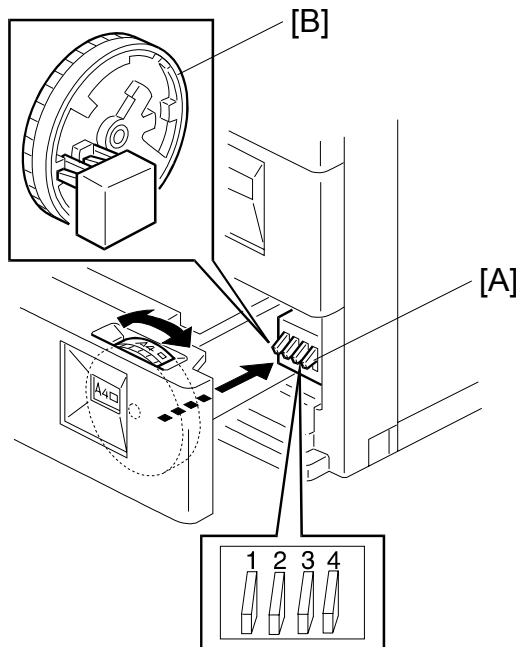
Also, the point at which this adjustment is applied (near-end [50 sheets], 25% full, 75% full) can be selected (③ in the graph) using the following SP modes.

Paper Size	Small Size	Middle Size
	HLT/A5 or smaller (default setting)	None (default setting)
1st paper tray	SP1908-6	SP1908-7
2nd paper tray	SP1909-6	SP1909-7
3rd paper tray	SP1910-6	SP1910-7
4th paper tray	SP1911-6	SP1911-7
Default (all trays)	Near-end	Near-end (default: not used)

6.11.8 PAPER SIZE DETECTION

Size \ SW	1	2	3	4
A3	○	○	○	○
A4 Sideways	●	●	○	●
A4 Lengthwise	●	●	○	○
A5 Lengthwise, 8 1/2" x 14"	○	○	●	●
B4, 11" x 17"	●	○	●	○
B5 Sideways, 11" x 8 1/2"	●	○	○	○
B5 Lengthwise, 8 1/2" x 11"	○	●	●	●
* (Asterisk)	○	●	○	●

●: ON (Not pushed)
○: OFF (Pushed)



B205D944.WMF

There are four paper size microswitches [A] on the front right plate of the paper tray unit. The switches are actuated by a paper size actuator [B] behind the paper size indicator plate, which is on the front right of the tray.

Each paper size has its own actuator, with a unique combination of notches. To determine which size has been installed, the CPU reads which microswitches the actuator has switched off.

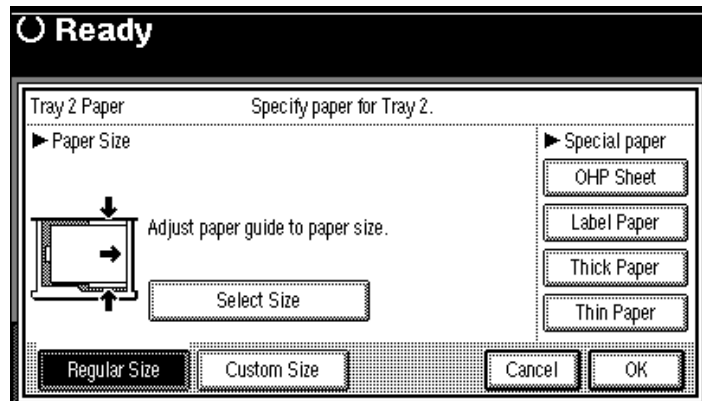
The CPU disables paper feed from a tray if the paper size cannot be detected. If the paper size actuator is broken, or if there is no tray installed, the Add Paper indicator will light.

When the paper size actuator is at the "*" mark, the paper tray can be set up to accommodate one of a wider range of paper sizes by using user tools. If the paper size for this position is changed without changing the user tool setting, a paper jam will result.

6.11.9 SPECIAL PAPER SETTING

Only the 2nd tray can feed special paper such as thick paper or envelopes. The special paper type can be selected either by using the UP mode or with the following operation.

- Select the 2nd tray then press the $\text{\textcircled{\#}}$ key.



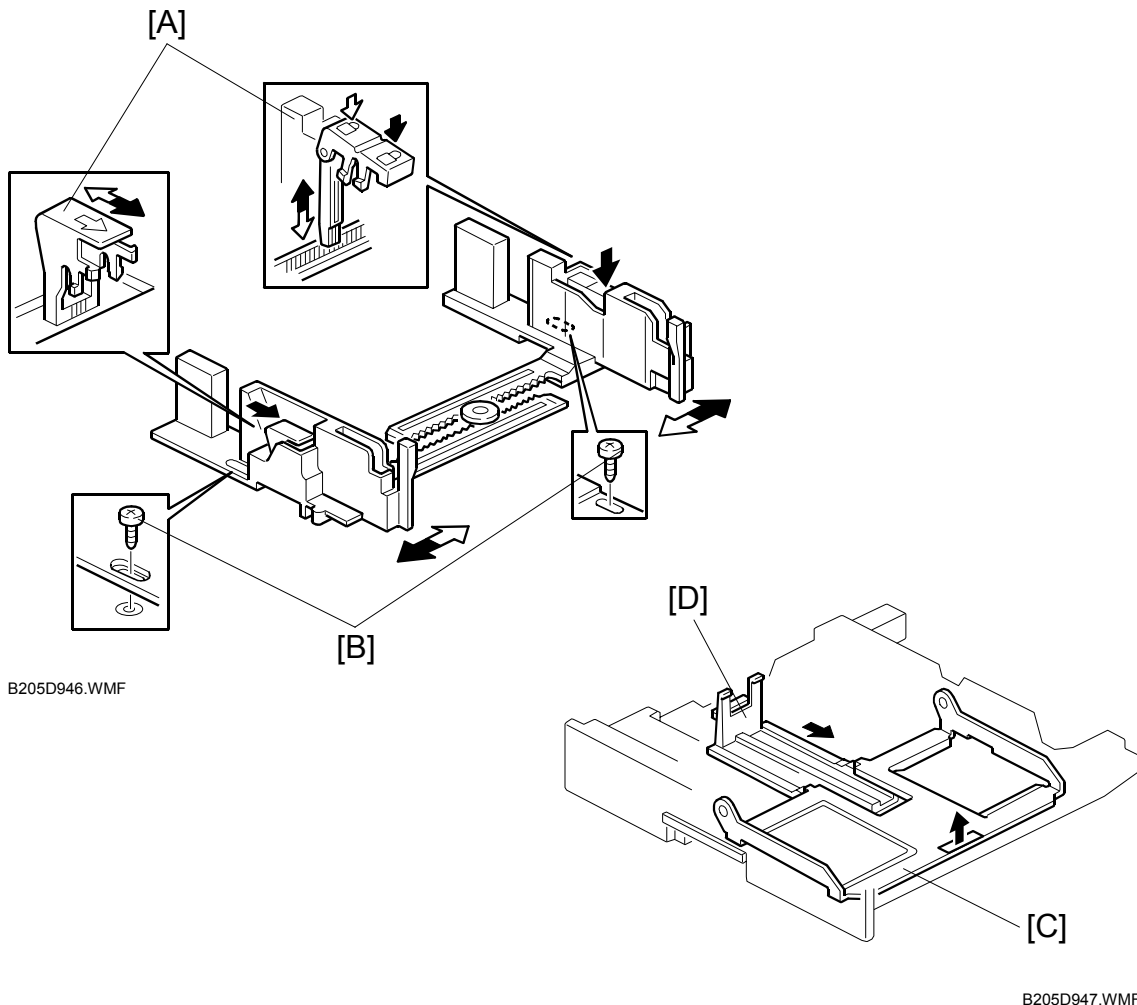
B205D945.WMF

After selecting the special paper type, the fusing temperature and transfer roller current will be changed as follows.

1. Fusing temperature (when thick paper is selected):
Current operation temperature + 15 °C
2. Transfer roller current:
A3 width (11"): 14 μ A
B4 width (10"): 15 μ A
A4 width (8.5"): 17 μ A
A5 width (5.5"): 20 μ A

Note that for the by-pass tray, the fusing and transfer conditions for special paper are also applied if the user uses thick (non-standard) mode.

6.11.10 SIDE AND END FENCES



Detailed
Descriptions

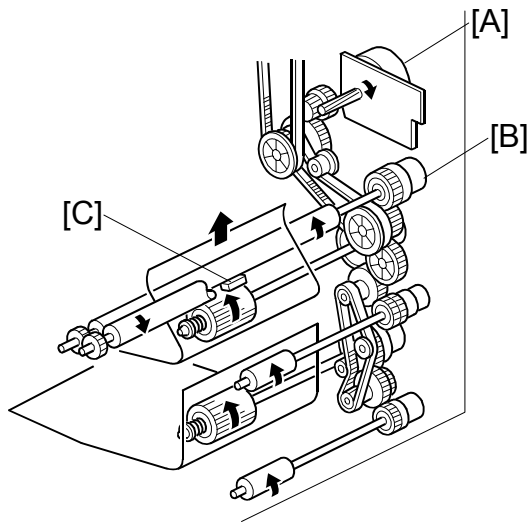
Side Fences

If the tray is full of paper and it is pushed in strongly, the fences may deform or bend. This may cause the paper to skew or the side-to-side registration to be incorrect. To correct this, each side fence has a stopper [A] attached to it. Each side fence can be secured with a screw [B], for customers who do not want to change the paper size.

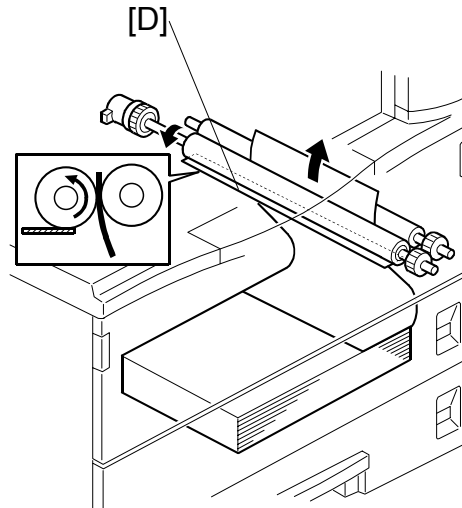
End Fence

As the amount of paper in the tray decreases, the bottom plate [C] lifts up gradually. The end fence [D] is connected to the bottom plate. When the tray bottom plate rises, the end fence moves forward and pushes the back of the paper stack to keep it squared up.

6.11.11 PAPER REGISTRATION



B205D949.WMF



B205D948.WMF

The drive from the main motor [A] is transmitted to the registration roller through the registration clutch gear [B].

The registration sensor [C] is used for correcting paper skew and for detecting paper misfeeds.

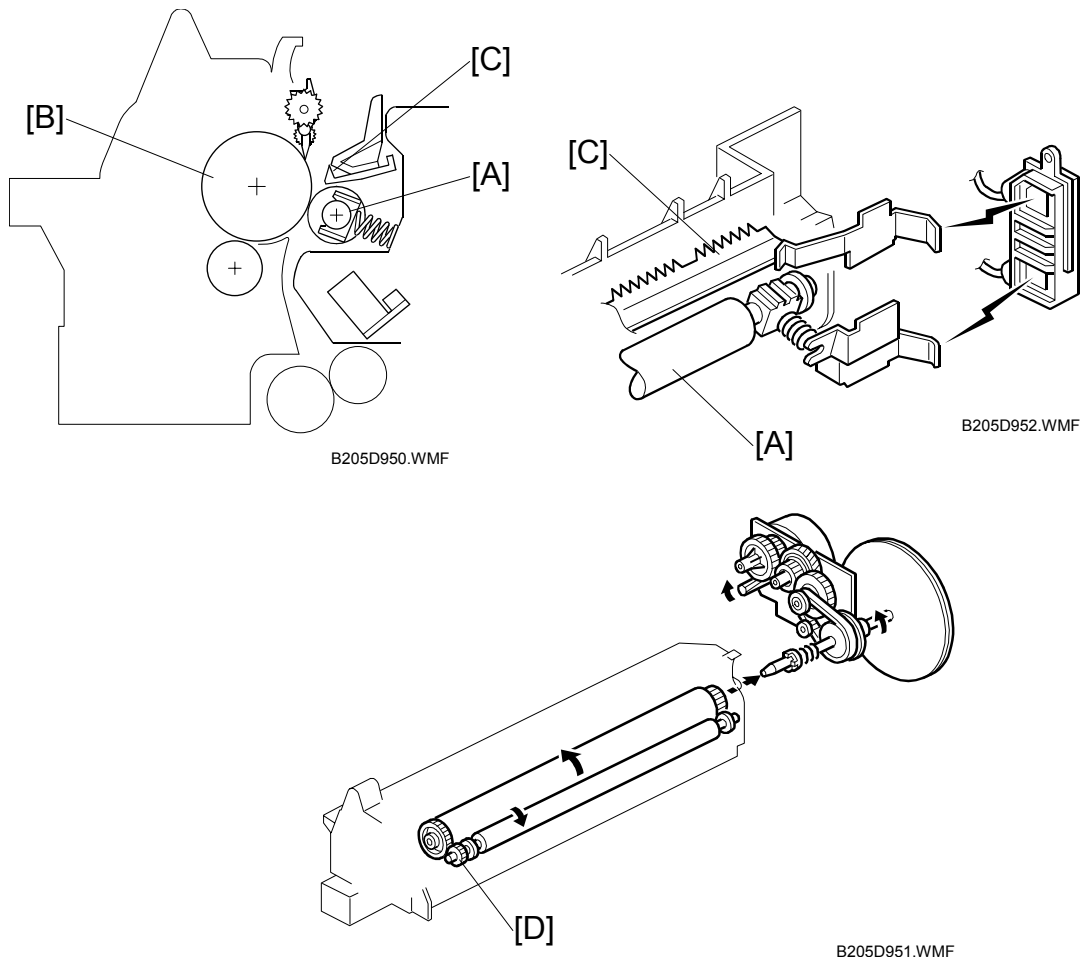
The cleaning mylar [D] contacts the registration roller. It removes paper dust from the registration roller so that this dust will not transfer into the development unit through the drum cleaning unit.

The amount of paper buckle at the registration roller to correct skew can be adjusted with SP 1003.

If jams frequently occur after registration, the paper feed clutch can be re-energized so that the feed roller can assist the registration roller to re-start paper feed. This may be needed when feeding thicker paper. This adjustment is made with SP 1903; it can be adjusted separately for tray 1 and the by-pass feeder, so place the problem paper type in one of these and adjust SP 1-903 for that tray only.

6.12 IMAGE TRANSFER AND PAPER SEPARATION

6.12.1 OVERVIEW



The machine uses a transfer roller [A], which touches the surface of the drum [B]. The high voltage supply board supplies a positive current to the transfer roller, which attracts the toner from the drum onto the paper. The current depends on the paper width, paper type, and paper feed tray.

The curvature of the drum and the discharge plate [C] help the paper to separate from the drum. The high voltage supply board also supplies a negative dc voltage to the discharge plate.

Drive from the drum through a gear [D] turns the transfer roller

6.12.2 IMAGE TRANSFER CURRENT TIMING

There are two transfer current levels: low transfer current level and high transfer current level. The image transfer procedure is as follows:

1. When the CPU receives the image writing start signal, the CPU instructs the high voltage supply board to supply +10 μ A (low transfer current level) to the roller. This prevents any positively charged toner on the drum surface from transferring to the transfer roller.
2. At a certain time after the low transfer current has been supplied to the roller, an appropriate current is applied to the roller to transfer the toner to the paper.
3. After the trailing edge of the paper has passed through the roller, transfer current turns off. In multiple copy mode, the transfer current shifts again to the low transfer current.

The transfer current (high transfer current level) depends on the paper feed station, paper width, and the temperature in the machine.

Example: Temperature = 15°C ~ 24°C

Paper Width	Paper Tray / By-pass Tray (Normal)	Duplex (2nd Side)	By-pass Tray (Thick) / 2nd Paper Tray (Special Paper)
A3/11" x 17", A4/8 1/2 x 11"sideways	14 μ A	10 μ A	14 μ A
B4	13 μ A	12 μ A	15 μ A
A4/11" x 8 1/2 lengthwise, A5/5 1/2 x 8 1/2 sidewise	13 μ A	16 μ A	17 μ A
A5/8 1/2 x 5 1/2 lengthwise and less	16 μ A	16 μ A	20 μ A

The transfer current can be adjusted using SP2301, except for the low transfer current.

Be careful when increasing the transfer current. This might cause a ghosting effect, in which part of the image at the top of the page is repeated lower down the page at a lower density. It may also damage the OPC drum in the worst case.

6.12.3 TRANSFER ROLLER CLEANING

If the paper size is smaller than the image, or if a paper jam occurs during printing, toner may be transferred to the roller surface. To prevent the toner from transferring to the back side of the printouts, the transfer roller requires cleaning before the next printing run.

During transfer roller cleaning, the high voltage supply unit supplies a negative cleaning current ($-4 \mu\text{A}$) to the transfer roller. Any negatively charged toner on the transfer roller is then transferred back to the drum. Then a positive cleaning current ($+10 \mu\text{A}$) is applied to the transfer roller to push back to the drum any positively charged toner on the transfer roller.

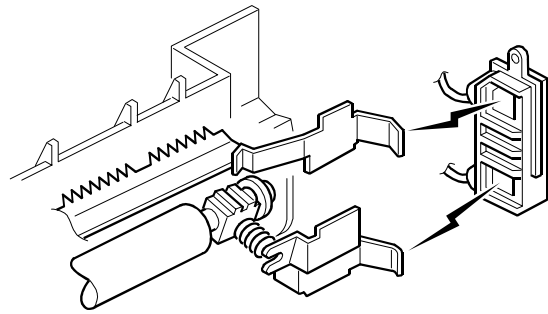
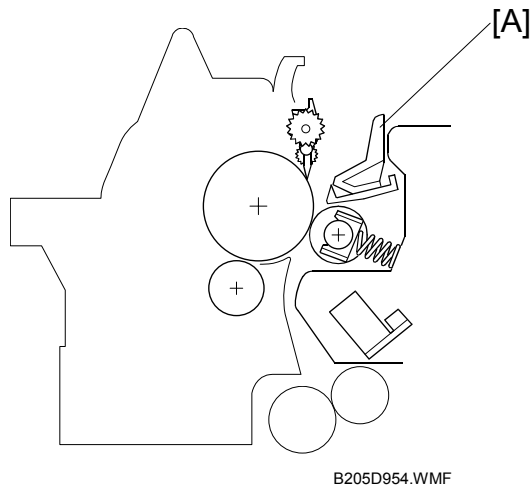
The machine goes through the cleaning mode in the following conditions:

- Before starting the printing job (only if enabled with SP2-996; note that the default setting is off)
- Just after the power is switched on.
- After a copy jam has been cleared
- After 50 sheets have printed. If a job is in progress when the number of prints exceeds 50, the machine enters cleaning mode at the completion of the current job (the print job is not interrupted for cleaning).

The transfer roller cleaning function is done.

Also, the transfer roller cleaning current can be adjusted using SP2-301-4.

6.12.4 PAPER SEPARATION MECHANISM

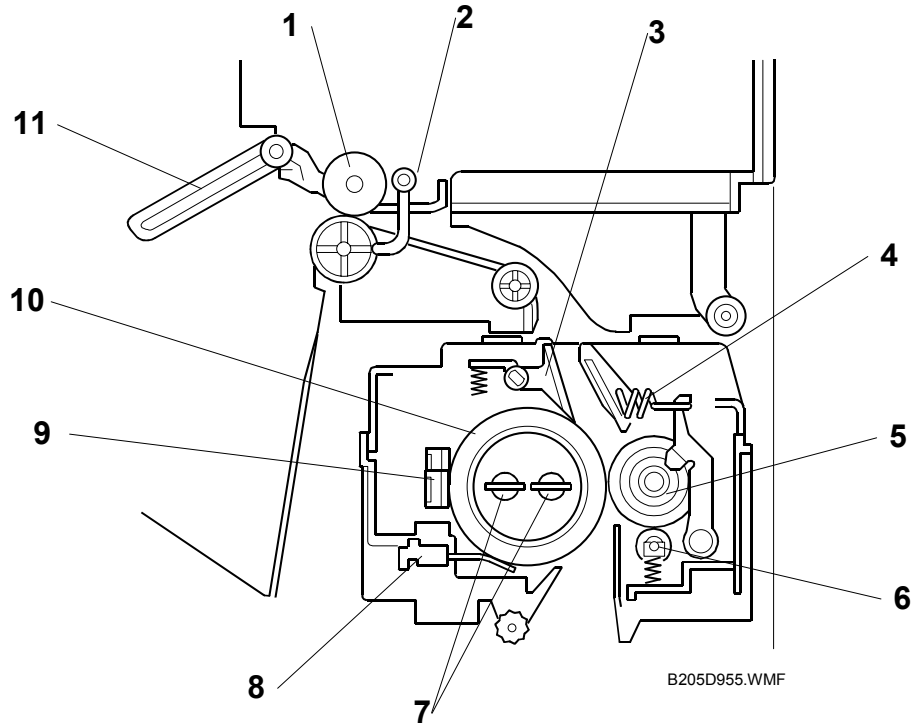


The discharge plate [A] and the drum curvature of the drum help the paper to separate away from the drum. The high voltage supply board applies a constant dc voltage, -1.8 kV (when feeding from a paper tray) or -2.1 kV (from the duplex unit) to the discharge plate.

The discharge plate voltage can be adjusted using SP2-901.

6.13 IMAGE FUSING AND PAPER EXIT

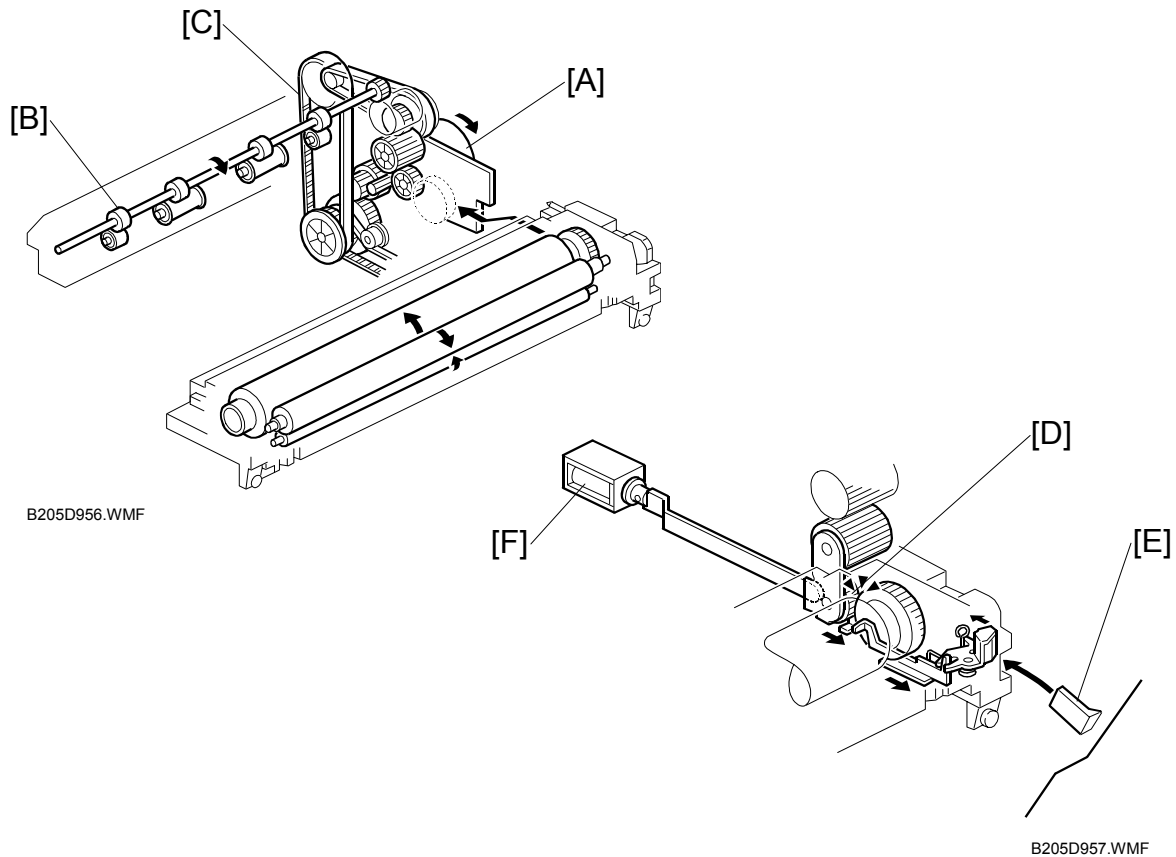
6.13.1 OVERVIEW



The fusing unit and paper exit area consist of the following parts.

- | | |
|-------------------------|---------------------------|
| 1. Paper exit roller | 7. Two fusing lamps |
| 2. Fusing exit sensor | 8. Two thermistors |
| 3. Hot roller strippers | 9. Four thermostats |
| 4. Pressure spring | 10. Hot roller |
| 5. Pressure roller | 11. Paper overflow sensor |
| 6. Cleaning roller | |

6.13.2 FUSING DRIVE AND RELEASE MECHANISM



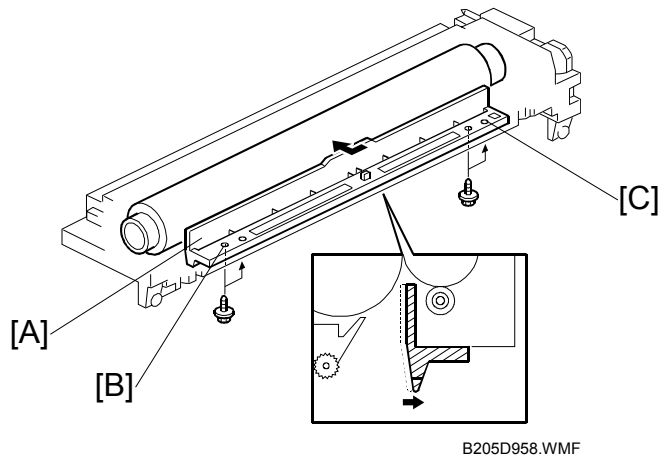
The main motor [A] drives the fusing unit through a gear train and drives the paper exit rollers [B] through a timing belt [C].

The fusing unit release mechanism automatically disengages the fusing unit drive gear [D] when the right cover [E] is opened. This allows the fusing unit drive gear to rotate freely so that misfed paper can easily be removed.

Also, the fusing drive is released by the fusing drive release solenoid [F]. To reduce the warming up time, the machine cuts the drive to the fusing unit during warming up. Just after the main switch is turned on, this solenoid is energized and the fusing unit drive gear [D] is disengaged.

However, the fusing unit drive is not released when the temperature is lower than 15°C.

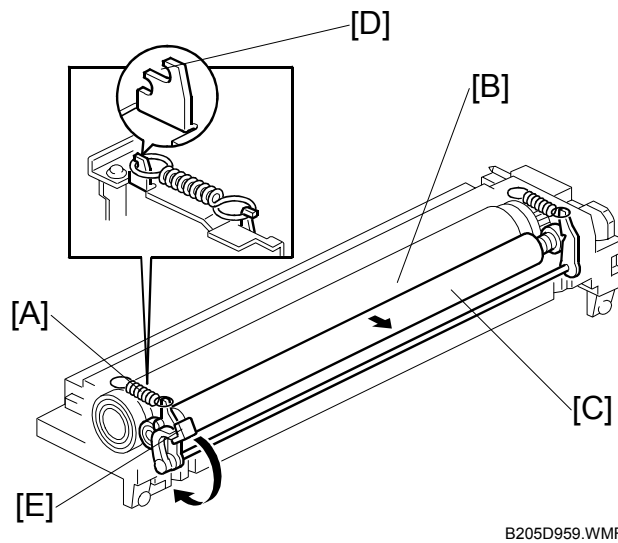
6.13.3 FUSING ENTRANCE GUIDE SHIFT MECHANISM



The entrance guide [A] is adjustable for paper thickness to prevent creasing. The left screw holes [B] on each side are used as the default setting.

If creasing occurs frequently in the fusing unit, adjust the entrance guide to the right, by securing it with the other holes [C]. This allows more direct access to the gap between the hot roller and the pressure roller.

6.13.4 PRESSURE ROLLER

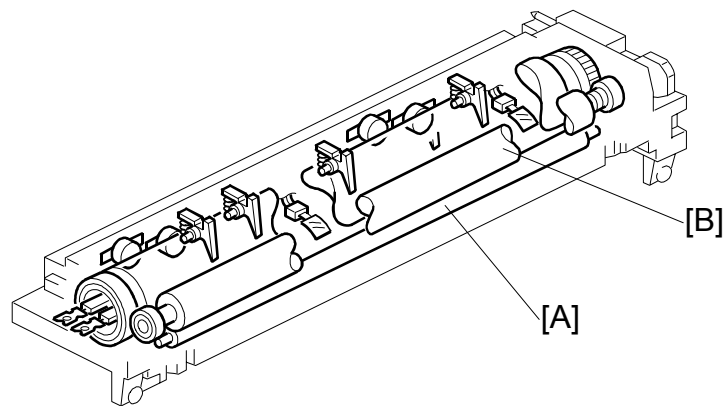


The pressure springs [A] constantly apply pressure between the hot roller [B] and the pressure roller [C].

Applied pressure can be changed by adjusting the position of the pressure springs. The spring is positioned at the top [D] as the default setting.

The user moves lever [E] when using thicker copy paper or envelopes, to reduce the pressure between the hot and pressure rollers.

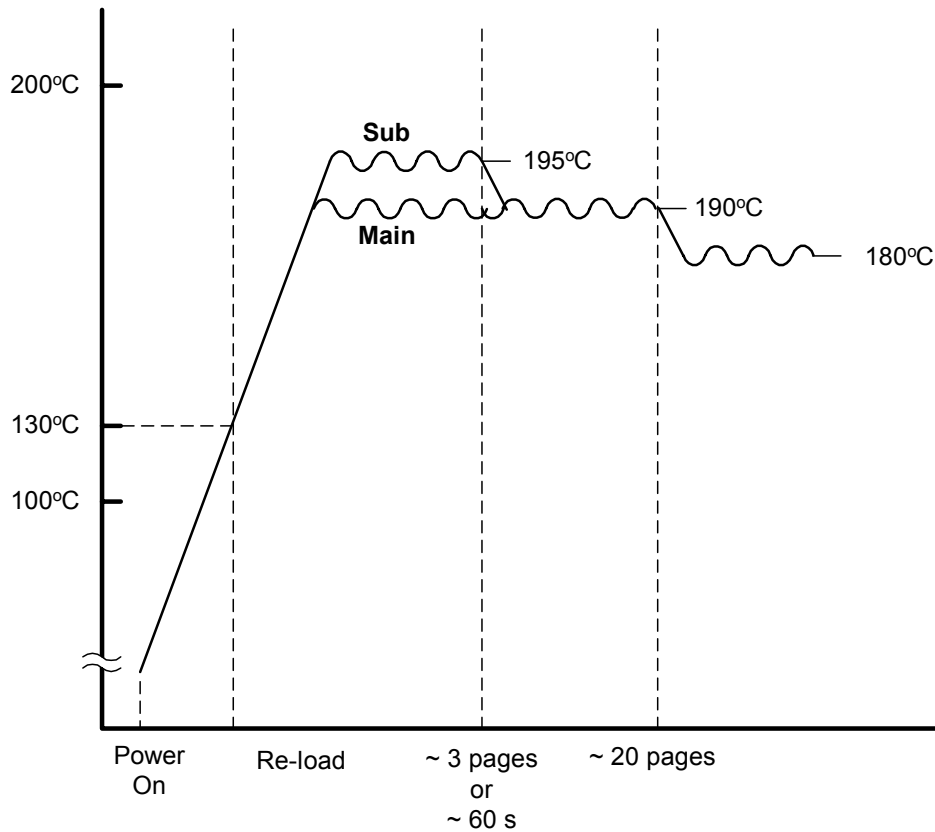
6.13.5 CLEANING MECHANISM



B205D960.WMF

The cleaning roller [A] is always in contact with the pressure roller [B]. It collects toner and paper dust adhered to the surface of the pressure roller.

6.13.6 FUSING TEMPERATURE CONTROL



B205D502.WMFF

Temperature Control

Just after the main power switch is turned on, the CPU turns on the fusing lamp to obtain a fusing temperature of 190°C (Main fusing lamp), 195°C (Sub fusing lamp) for the first 60s, or for the first three consecutive pages of printing, whichever comes first. After that, the machine keeps the fusing temperature at 190°C for the first 20 consecutive pages of printing. Then the fusing temperature is kept at 180°C.

The three-page and 60-second limits can be adjusted with SP1-105-8 and -9.

Note that the fusing temperature is higher if the user uses special paper in the 2nd tray or thick paper mode from the bypass tray.

Fusing Lamp Control

Turning on and off the fusing lamp power causes fluorescent light in the room to flicker. To reduce the flickering, use the following SP modes.

Fusing temperature detection cycle (SP mode 1-108)

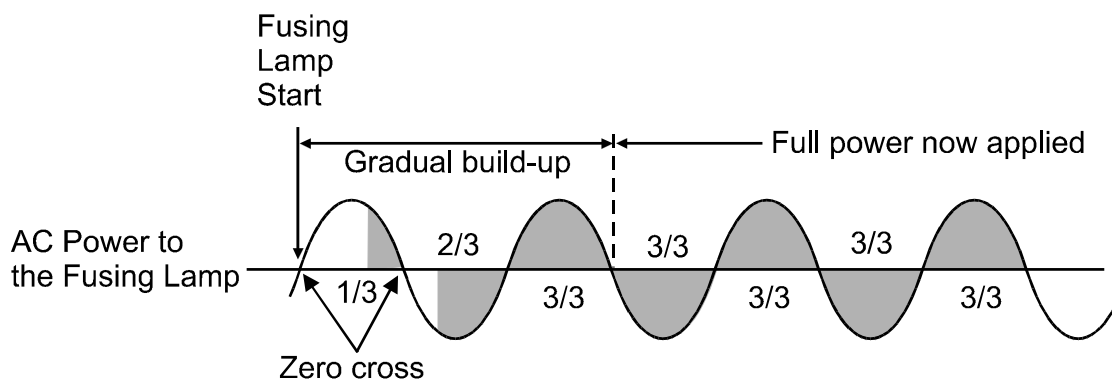
The CPU checks the output from the fusing thermistor once a second (default setting). The CPU compares the current and previous temperatures. Based on the result, it then decides how long the fusing lamp power should be on during the next one-second interval (also, if the current temperature is too high, the power will not be needed).

Starting and stopping the fusing lamp power every second causes fluorescent lighting in the room to flicker. To reduce this flickering, use SP1-108 to change the cycle from 1 second to 2 seconds.

Fusing soft-start

In addition, whenever the fusing lamp power switches on, full power is applied to the fusing lamp gradually, not all at once. This prevents the power in the room from dropping suddenly. This feature is known as “Soft Start”. The machine does this by gradually allowing more power to the fusing lamp over a number of zero-cross cycles of the ac supply. The diagram below shows full power being applied gradually over the duration of 3 zero-cross cycles. Soft start occurs every time the fusing lamp power switches on (i.e., at some time during every second), not just at the start of the print job.

NOTE: This feature is effective to counter flickering lights. However, generated noise increases if the setting is changed from the default. If a radio or a TV is close by the machine, the noise may have some effect on the image or sound.



B205D961.WMF

Detailed
Descriptions

6.13.7 OVERHEAT PROTECTION

If the hot roller temperature becomes higher than 231°C, the CPU cuts off the power to the fusing lamp. At the same time, SC543 is generated.

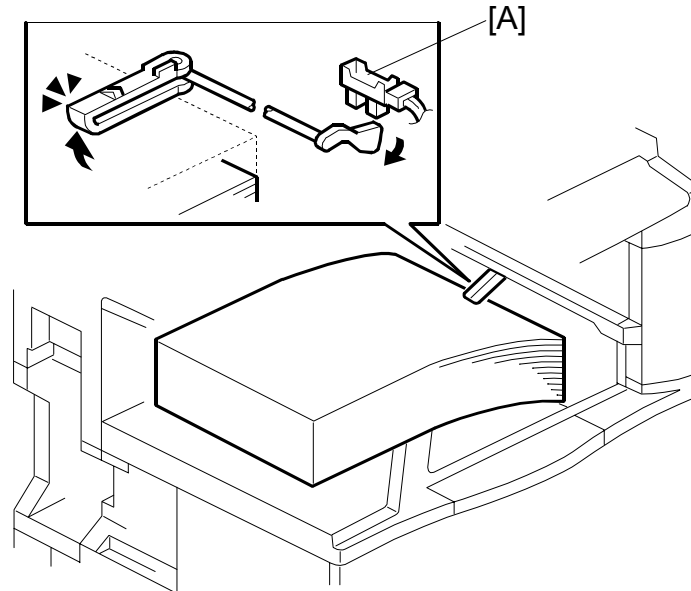
Even if the thermistor overheat protection fails, there are four thermostats in series with the common ground line of the fusing lamp. If the temperature of the thermostat reaches 210°C, one of the thermostats opens, removing power from the fusing lamp. At the same time, SC542 is generated and the machine stops operating.

In addition to these protection devices, there is a backup temperature control circuit on the SBCU. If the thermistor protection fails, or if a short circuit occurs on the PSU board.

If the temperature exceeds 250 °C:

- This backup temperature control circuit switches off the fusing lamps
- The machine issues SC544.

6.13.8 PAPER EXIT

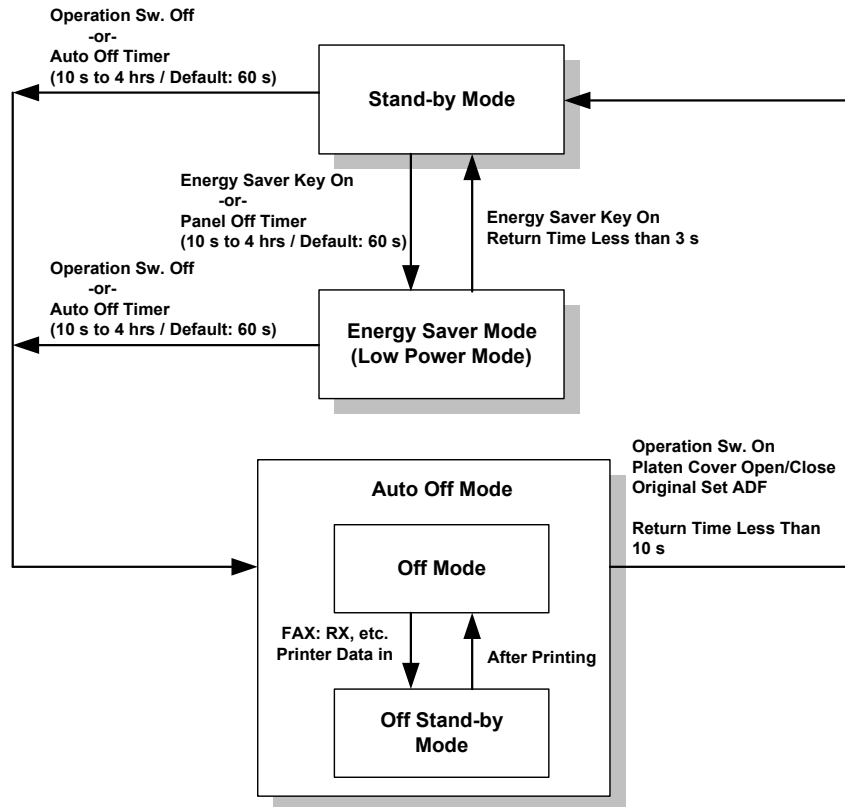


B205D962.WMF

The paper overflow detection sensor [A] is located at the paper exit section of the fusing unit. When this sensor is activated, the machine detects that the paper stack height exceeded a certain limit and stops printing.

6.14 ENERGY SAVER MODES

6.14.1 OVERVIEW



B205D963.WMF

When the machine is not being used, the energy saver function reduces power consumption by decreasing the fusing temperature.

This machine has two types of energy saver mode as follows.

- 1) Energy saver mode
- 2) Auto Off mode

These modes are controlled by the following UP and SP modes.

- Panel off timer (energy saver mode timer) :
User Tools> System Settings> Timer Setting> Panel Off Timer
- Auto off timer:
User Tools> System Settings> Timer Setting> Auto Off Timer
- Auto off disabling (SP mode): Set SP 5-305 to 1. This allows the user to disable auto off mode by setting the auto off timer to 0.

6.14.2 ENERGY SAVER MODE

Entering the energy saver mode

The operation manual uses the term 'panel off mode' for the timer.

The machine enters energy saver mode when one of the following is done.

- The panel off timer runs out
- The Clear Mode/Energy Saver Key is held down for one second

Note that the default setting of the panel off timer is 60 s, which is the same as the auto off timer. In this condition, if the machine is not touched for 60 s, it will go straight to auto off mode. If the user wants an energy saver mode and an auto off mode, the panel off timer must be set to a shorter value than the auto off timer,

What happens in energy saver mode

When the machine enters energy saver mode, the fusing lamp drops to a certain temperature, and the operation panel indicators are turned off except for the Energy Saver LED and the Power LED.

If the CPU receives an image print out command from an application (e. g. to print incoming fax data or to print data from a PC), the fusing temperature rises to print the data.

Return to stand-by mode

If one of the following is done, the machine returns to stand-by mode:

- The Clear Mode/Energy Saver Mode key is pressed
- Any key on the operation panel or touch panel screen is pressed
- An original is placed in the ADF
- The ADF is lifted
- A sheet of paper is placed in the by-pass feed table

The recovery time from energy saver mode is about 3 s.

Mode	Operation Switch	Energy Saver LED	Fusing Temp.	+24V	System +5V
Energy Saver	On	On	150°C	On	On

6.14.3 AUTO OFF MODE

There are two Auto Off modes: Off Stand-by mode and Off mode. The difference between Off Stand-by mode and Off mode is the machine's condition when it enters Auto Off mode.

NOTE: The machine will not enter the Auto Off mode for at least 90 sec. after the machine is turned on when applications other than Copy (printer/scanner, printer, etc.) are installed.

Entering off stand-by and off modes

The machine enters the Off Stand-by mode or Off mode when:

- The auto off timer runs out
- The operation switch is pressed to turn the power off

If one or more of the following conditions exists, the machine enters Off Stand-by mode. If none of these conditions exist, the machine enters Off Mode.

- Error or SC condition
- An optional G4 unit is installed
- Image data is stored in the memory
- During memory TX or polling RX
- The handset is off hook
- An original is in the ADF
- The ADF is open

Off Stand-by mode

The system +5V is still supplied to all components. When the machine detects a ringing signal or receives a stream of data for a print job, the +24V supply is activated and the machine automatically prints the incoming message or executes the print job.

Off Mode

The system +5V supply also turns off. However, +5VE (+5V for energy saver mode) is still activated. When the machine detects a ringing signal, off-hook signal, or receives a print job, the machine returns to the Off Stand-by mode and the system +5V and +24V supplies are activated.

Returning to stand-by mode

The machine returns to stand-by mode when the operation switch is pressed. The recovery time is about 10 s.

Mode	Operation Switch	Energy Saver Mode	Fusing Lamp	+24V	System +5V	Note
Off Stand-by	Off	Off	Off (On when printing)	On	On	
Off	Off	Off	Off	Off	Off	+5VE is supplied

7. OVERALL MACHINE INFORMATION

7.1 SPECIFICATIONS

	B205/B209/D007/D008
Configuration:	Desktop
Copy Process:	Dry electrostatic transfer system
Originals:	Sheet/Book
Original Size:	Maximum A3/11" x 17"
Copy Paper Size:	Maximum: A3/11" x 17" Minimum: A5/8 1/2" x 5 1/2" lengthwise Custom sizes 2nd paper tray Width: 100 ~ 297 mm (3.9" ~ 11.5") Length: 148 ~ 432 mm (5.8" ~ 17.0") By-pass tray (Option): Width: 90 ~ 305 mm (3.5" ~ 12.0") Length: 148 ~ 1,260 mm (5.8" ~ 49.6")
Copy Paper Weight:	Paper Tray: 60 ~ 105 g/m ² , 16 ~ 28 lb (1st paper tray) 52 ~ 157 g/m ² , 16 ~ 43 lb (2nd paper tray) By-pass (Option): 52 ~ 157 g/m ² , 16 ~ 42 lb
Reproduction Ratios:	5 Enlargement and 7 Reduction

	A4/A3 Version	LT/DLT Version
Enlargement	400%	400%
	200%	200%
	141%	155%
	122%	129%
	115%	121%
Full Size	100%	100%
Reduction	93%	93%
	87%	85%
	82%	78%
	71%	73%
	65%	65%
	50%	50%
	25%	25%

Zoom:	25% to 400% in 1% steps (Platen mode) 25% to 200% in 1% steps (ADF mode)
Power Source:	120 V, 60 Hz: More than 12 A (for North America) 220 ~ 240 V, 50/60 Hz: More than 7 A (for Europe/Asia) 110 V, 50/60 Hz: More than 13 A (for Taiwan)

Power Consumption: 115V Model (B205/B209/D007/D008)

Mainframe Only		
	B205/D007	B209/D008
Warm-up	1.27 kW	1.27 kW
Standby	about 150 W	about 160 W
During Printing	about 690 W	about 790 W
Maximum	1.17 kW	1.17 kW
Complete System		
Warm-up	1.34 kW	1.34 kW
Standby	about 160 W	about 170 W
During Printing	about 750 W	about 840 W
Maximum	1.28 kW	1.28 kW

Power Consumption: 220V Model (B205/B209/D007/D008)

Mainframe Only		
	B205/D007	B209/D008
Warm-up	1.27 kW	1.27 kW
Standby	about 150 W	about 150 W
During Printing	about 700 W	about 800 W
Maximum	1.05 kW	1.05 kW
Complete System		
Warm-up	1.32 kW	1.32 kW
Standby	about 150 W	about 160 W
During Printing	about 720 W	about 820 W
Maximum	1.15 kW	1.15 kW

- NOTE:** 1) Full system: Mainframe + ADF + 1-bin Sorter + Paper Tray Unit + Duplex Unit + Bridge Unit + Finisher
 2) Without the Option heaters, fax unit, and printer controller

Noise Emission (Sound Power Level):		
Stand-by (Mainframe only):	40 dB(A)	
Stand-by (Full System)	44 dB(A)	
Operating (Mainframe only):	63 dB(A)	
Operating (Full System):	B205/D007	68.5 dB(A)
	B209/D008	69 dB(A)

- NOTE:** 1) The above measurements were made in accordance with ISO 7779.
 2) Full System: Mainframe + ADF + 1-bin Sorter + Paper Tray Unit + Duplex Unit + Bridge Unit + Finisher

	B205/B209/D007/D008
Dimensions (W x D x H):	550 x 604 x 709 mm (21.7" x 23.8" x 28.0") Measurement Conditions: <ul style="list-style-type: none"> • With the paper tray unit or LCT • Without the ADF
Weight:	Less than 55 kg (121.3lb)

Copying Speed (copies/minute):

B205/D007	A4, 11" x 8 1/2" LEF	A3/11" x 17"
Non-memory copy mode	25	16
Memory copy mode	25	16
B209/D008	A4, 11" x 8 1/2" LEF	A3/11" x 17"
Non-memory copy mode	30	17
Memory copy mode	30	17

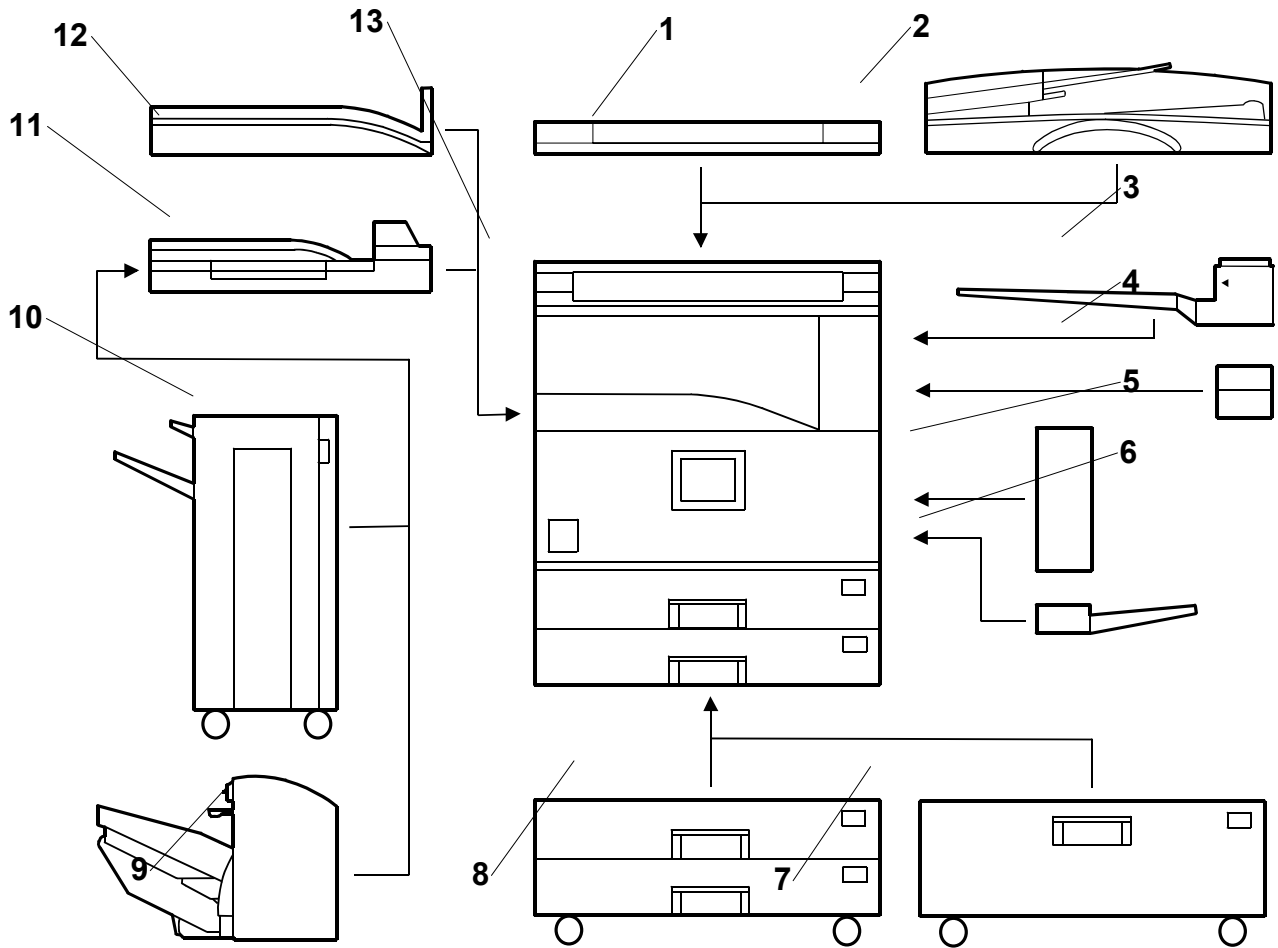
NOTE: Measurement Conditions

- 1) Not APS mode
- 2) A4/LT and A3/DLT copying
- 3) Full size

	B205/B209/D007/D008
Warm-up Time:	Less than 10 seconds (20°C, 68°F) from power on with the operation switch. Less than 12 seconds (20°C, 68°F) from power on with the main power switch.
First Copy Time:	Less than 4.4 sec. (A4), less than 5.0 sec. (LT)
	Measured under the following conditions: <ul style="list-style-type: none"> • When the polygonal mirror motor is rotating. • From the 1st paper tray • Not APS mode • Full size
Copy Number Input:	Ten-key pad, 1 to 999 (count up or count down)
Manual Image Density:	7 steps
Paper Tray Capacity:	Paper Tray: 500 sheets x 2 (Special paper in the 2nd paper tray: 50 sheets) Paper Tray Unit (Option): 500 sheets x 2 LCT (Option): 1000 sheets x 2 By-pass Tray (Option): 100 sheets (A4, B5, A5, B6, 8 1/2" x 11", 5 1/2" x 8 1/2") 10 sheets (A3, B4, 11" x 17", 8 1/2" x 13") 1 sheets (non-standard sizes) NOTE: Copy paper weight: 80g/m ² (20 lb)
Toner Replenishment:	Cartridge exchange (360 g/cartridge)
Toner Yield:	11 k copies (A4 sideways, 6% full black, 1 to 1 copying, ADS mode)
Copy Tray Capacity:	Copy Tray: 500 sheets (without 1-bin tray) 250 sheets (with 1-bin tray)
Memory Capacity:	Standard 128 MB, Optional memory 256 MB

7.2 MACHINE CONFIGURATION

7.2.1 SYSTEM COMPONENTS



B205V901.WMF

	Item	No.	B205 B209	D007/D008	
			Code	Code	Note
Machine	Copier	13	B205	D007	Unique
		13	B209	D008	Unique
Options	Paper Tray Unit-2 tray (Option)	8	B390	B390	Common with B205/B209
	LCT (Option)	7	B391	B391	
	Platen Cover (Option)	1	B406	B406	
	1000-sheet finisher (Option)	10	B408	B408	
	1-bin Tray (Option)	3	B413	B413	
	Duplex Unit (Option)	5	B414	B414	
	By-pass Tray (Option)	6	B415	B415	
	Interchange Unit (Option)	4	B416	B416	
	Bridge Unit (Option)	11	B417	B417	
	500-sheet finisher (Option)	9	B442	B442	
	Key Counter Bracket (Option)		B452	B452	
	Shift Tray (Option)	12	B459	B459	
	Data Overwrite Security Unit		B735	B735	
	Copy Data Security Unit		B770	B770	
	HDD (Option)		B773	B773	
	ARDF (Option)	2	B810	B810	
	256 MB Memory DIMM (Option)		G818	G818	
	FAX				
	Handset (Option)		B433	B433	
	Fax Unit (Option)		B766	B766	
	G3 Interface Unit (Option)		B768	B768	
	Memory – 32 MB (Option)		G578	G578	
	PRINTER, PRINTER/SCANNER				
	Printer Unit (Option)		B846	D313	Unique
	Printer/Scanner Unit (Option)		B767	D310	Unique
	RPCS Printer Unit (Option)		—	D314	RPCS w/o HDD
	Printer Enhance Option		—	D318-10, -11, -12	PCL with HDD
	Scanner Enhance Option		—	D318-20, -21, -22	Scanner support
	IEEE1394 Interface Board (FireWire - Option)		B581	B581	Common with B205/B209
	File Format Converter (Option)		B609	B609	
	Bluetooth Interface Unit		B736	B826	
	PostScript 3 (Option)		B757	B318-00	Unique
	IEEE1284 Interface Board (Centronics)		B679	B679	Common with B205/B209
	IEEE 802.11b Wireless – LAN (Option)		G813	G813	

Note: USB 2.0 and the NIB are built into the controller board. These items are not options (installation is not necessary). However, to use these functions they must be enabled with SP5985. Also, a printer kit or printer/scanner kit must be installed.

7.2.2 OPTIONS TABLE

Copier options

No.	Option	B205/B209	Note
1	ARDF (Option)	○	Install either no. 1 or 2.
2	Platen Cover (Option)	○	Install either no. 1 or 2.
3	Paper Tray Unit – two-tray (Option)	○	Install either no. 3 or 4.
4	LCT (Option)	○	Install either no. 3 or 4.
5	1-bin Tray (Option)	Δ	Requires no.9.
6	Shift Tray (Option)	○	Install either no. 6 or 10.
7	Duplex Unit (Option)	Δ	Requires no.9.
8	By-pass Tray (Option)	○	
9	Interchange Unit (Option)	○	
10	Bridge Unit (Option)	Δ	No. 10 requires no.11 or 12. Install either no. 6 or 10.
11	1000-sheet Finisher (Option)	Δ	Install either no. 11 or 12 Requires no.10, and either no.3 or 4
12	500-sheet Finisher (Option)	Δ	Install either no. 11 or 12 Requires no.10, and either no.3 or 4
13	Memory 256 MB (Option)	○	
14	Key Counter Bracket	○	

○ = Available Δ = Requires another option

Fax option

All options for the fax unit are available when the fax unit has been installed.

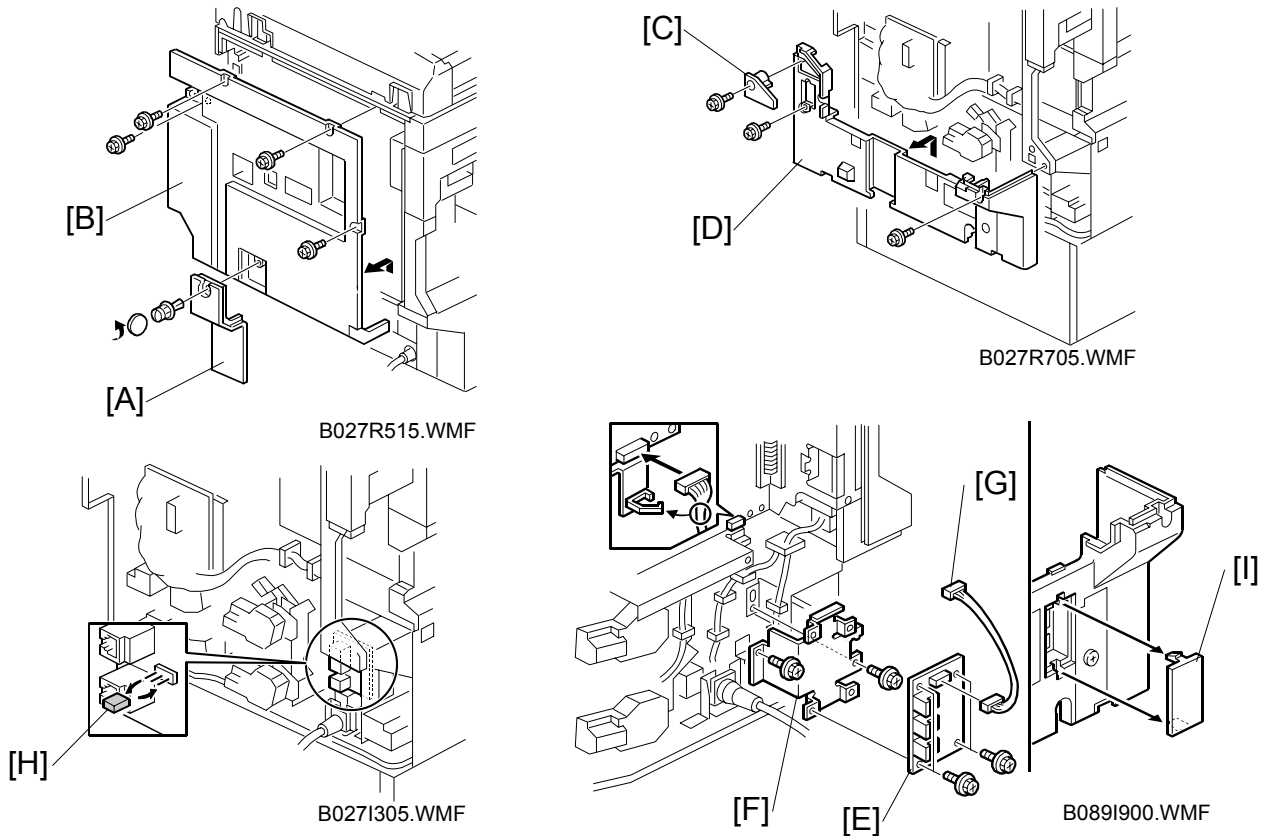
Printer/scanner options

- Two board slots are available, but only one of the following boards can be installed:
 - IEEE1284 Interface Board B679 (Centronics)
 - IEEE 802.11b Wireless LAN G813
 - IEEE1394 Interface Board B581 (FireWire) (B205/B209 only)
 - Bluetooth Interface Unit B736
- The printer/scanner options require:
 - 256 MB Memory Unit G818 (DIMM)
 - For more details see the Printer/Scanner manuals for the B205/B209 or D007/D008.

APPENDIX 1 (FOR MODEL R-C4/R-C4.5)

1. RSS (REMOTE SERVICE SYSTEM)

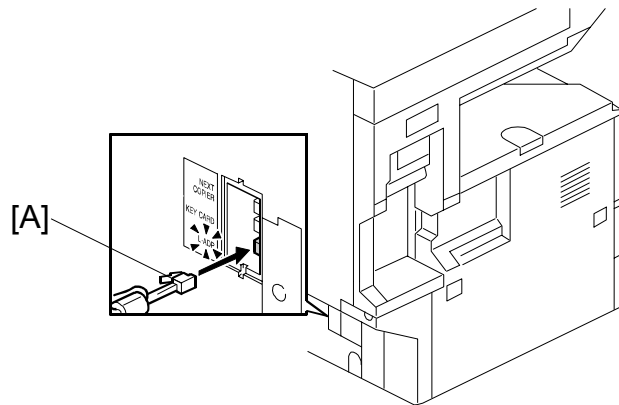
1.1 RSS SET UP



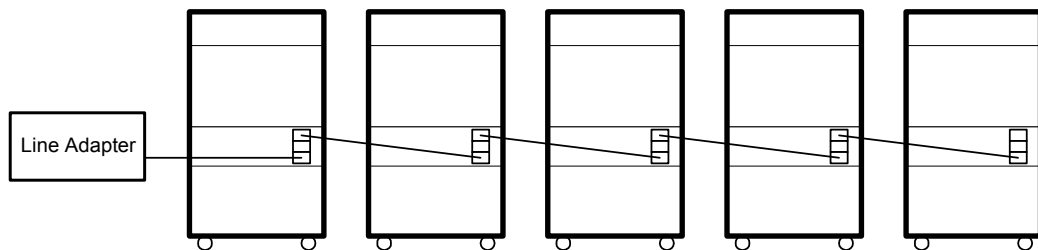
⚠ CAUTION

Unplug the machine power cord before starting the following procedure.

1. Remove the connector cover [A] (1 clip) and disconnect the cable.
 2. Remove the rear cover [B] (4 screws).
 3. Remove the duplex connector cover [C] (1 screw) and the lower rear cover [D] (2 screws).
 4. Install the RSS board [E] to the bracket [F] (4 screws).
 5. Install the RSS board assembly to the machine (2 screws).
 6. Install the harness [G] between the RSS board and the IPU board (CN107).
- When connecting only one machine to the line adapter, skip step 7.**
7. Set the jumper switch [H] on the RSS board as shown (default setting: 1-2).
 8. Remove the cover [I] from the lower rear cover.



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Machine No.	1	2	3	4	5
Jumper Set	2-3	2-3	2-3	2-3	1-2
PI device code	0	1	2	3	4

9. Reassemble the machine.
10. Connect the modular cord [A] to the line adapter as shown.
11. Install the line adapter (refer to chapter 2-1 L-ADP Installation Procedure in the CSS Service Manual).
12. Turn on the machine.

When connecting only one machine to the line adapter, skip step 13.

13. Enter the Copier SP mode and set the PI device code with SP5-821 (default 0).

NOTE: After changing the value, turn the main power switch off and on to enable the PI device code.

1.2 SP MODE SETTINGS

After installing the machine and line adapter, change the value of SP5-816 (CSS Function) to 1.

Check the values of the following SP modes. Ensure they are set correctly.

NOTE: SP5-507 is only for the Japanese version. Do not change.

SP No.	Correct Setting
SP5-501-1 (PM Alarm Interval)	120k
SP5-504 (Jam Alarm Setting)	3
SP5-505 (Error Alarm Setting)	50
SP5-508-1 (CC Call – Remain of Jam)	1 (On)
SP5-508-2 (CC Call – Continuous Jam Occurrence)	1 (On)
SP5-508-3 (CC Call - Cover Open)	1 (On)
SP5-508-4 (New CC Call Mode)	1 (New Mode)

1.3 CHECKING ITEMS USING RSS

1.3.1 READ ONLY ITEMS

Item
Paper end
Toner end
Staple end
Toner near end
Door open
Paper jam information
Machine condition
Paper size information
System configuration
Vsg, Vsp, Vsdp, Vt data
Fax information (Total No. of Tx, Total No. of Rx, etc)
Printer information (Total No. of print by Emulation, etc)
Related SP Modes: SP7-001 ~-003, -101, -206, -506, -502~507, 002, 803, -001, 402, 403, 801 SP8-001 ~-006, -011~-017, -021~-027, -061~-062, -064, -071~072, -074, -111, -121, -131, -141, -151, -161, -191~193, 195, -196, -205, -211~216, -221, -231, -241, -251, -291, -301, -381~387, -391, -401~404, -411, -421, -422, -424, -431, -441~444, -451, -461~464, -471, -481, -484, -521, -522, -524, -531, -633, -643, -651, -661, -671, -681, -683, -691, -701, -741, -781, -831, -841, -861, -871, -881, -901, -911, -941

1.3.2 AUTO CALL AND READ ITEMS

SC Calls

The SC calls are generated according to the SC level as follows. Please note that the SC levels of this copier are defined differently from other copiers.

SC Level	Definition	SC Auto Call Condition
A	Fusing unit SCs which cannot be reset by customer.	An SC call is generated immediately
B	SCs that disable only the features which use the defective item.	An SC call is generated when the SC occurs two times within 10 copies.
C	SCs that are not shown on the operation panel.	An SC call is not generated.
D	SCs caused by incorrect sensor detection; these can be reset by turning the main power switch off and on.	An SC call is generated when the SC occurs two times within 10 copies.

CC Manual Calls

The CC manual call may be generated by the customer, when “1: New Mode” is selected with SP5-508-4 (the default is “1”). There are two types of CC manual calls as follows.

CC Code	Definition
Manual Call: CC 101	When the number of jams specified by SP5-508-12 are detected consecutively: a). When “0:Auto Call” is selected with SP5-508-22, CC101 will be generated automatically. b). When “1: Manual Call” is selected with SP5-508-22, the Manual call key appears on the LCD. Upon pressing the key, a “Manual Call: CC101” is generated immediately. “Manual Call:CC101” will be listed as an MC in the Call List screen of the Concorde system, and “Manual Call:CC101” will be indicated in the “Symptom” column of the call detail screen. The default setting of SP5-508-22 is “1: Manual Call”.
Manual Call: CC 202	When in a paper jam or an original jam condition and a cover is open for longer than the time specified by SP5-508-13, one of the following will occur after all doors are closed. a). When “0: Auto Call” is selected with SP5-508-23, CC202 will be generated automatically. b). When “1: Manual Call” is selected with SP5-508-23, the Manual call key appears on the LCD. Upon pressing the key, a “Manual Call: CC202” is generated immediately. “Manual Call:CC202” will be listed as an MC in the Call List screen of the Concorde system, and “Manual Call:CC202” will be indicated in the “Symptom” column of the call detail screen. The default setting of SP5-508-23 is “1: Manual Call”.

CC Auto Call

The CC auto call will be automatically generated when “0: Previous Mode” is selected with SP5-508-4 (default is “1”). There are three types of CC auto calls as follows.

CC Code	Definition
CC 101	When a paper jam is detected five times consecutively, CC101 is automatically generated.
CC 201	When a paper jam condition is not reset for 15 minutes, CC201 is automatically generated.
CC 202	When a cover is left open for 15 minutes, CC202 is automatically generated.

Alarm Calls

There are four types of Alarm Calls as follows:

Type	Definition
PM	When the PM counter reaches 120,000, a PM Alarm Call is automatically reported to the Concorde system.
Original Count	An alarm call is generated after the specified total number of originals goes through the ARDF.
SC	When the SC alarm counter reaches 5, an SC Alarm Call is automatically generated. The SC alarm counter counts the number of SCs and it decreases when an SC does not occur for a specified number of copies.
Jam	When Jam alarm counter reaches 10, a Jam Alarm Call is automatically generated. The Jam Alarm counter counts the number of paper jams and it decreases when a paper jam does not occur for a specified number of copies.

1.3.3 READ AND WRITE ITEMS

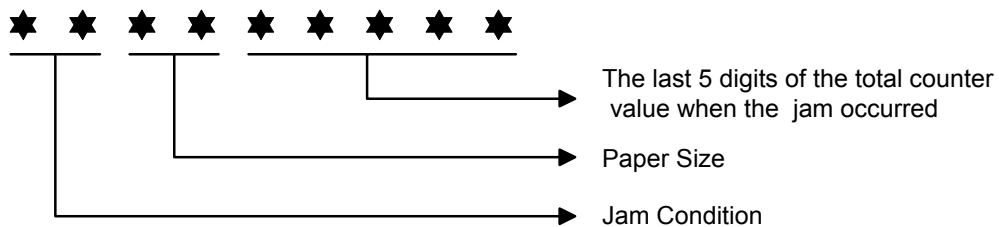
SP mode	UP Mode
Print registration	Paper Tray Priority
Fusing Temperature	APS Priority
Charge Bias	Panel Tone
Blank Margin	Max. Copy Quantity
Development Bias	System Auto Reset Timer
Transfer Roller Bias	Copier Auto Reset Timer
Scanner Speed	Energy Saver Timer
Scanner Registration	Auto Tray Switching
PM Alarm	A3/DLT Double Count
Jam Alarm	Set Date / Set Time
Error Alarm	AOF
Supply Calls	Auto Off Timer
CC Calls	SADF Auto Reset
Machine Serial Number	
ID2 Code	
Service TEL Number Setting	
Remote Service Items	
Staple Position Adjustment	
Fax Bit Switches	
Printer Bit Switches	
Total Counters	

1.3.4 EXECUTE ITEMS

Item
SC reset
PM counter reset
SC/Jam counter reset

1.4 JAM HISTORY

The jam history is read as shown below.



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1.4.1 JAM CONDITION TABLE

Copier

Code	Meaning
01	Jams at power on.
03	Paper does not reach the upper relay sensor (from paper tray unit)
04	Paper does not reach the lower relay sensor.
05	Paper does not reach the vertical transport sensor (optional paper tray unit).
06	Paper does not reach the LCT relay sensor.
07	Paper does not reach the upper relay sensor (from by-pass)
10	Paper does not reach the registration sensor (from duplex)
11	Paper does not reach the registration sensor.
12	Paper does not reach the paper exit sensor
13	Paper does not reach the bridge relay sensor
14	Paper does not reach the bridge exit sensor
15	Paper does not reach the duplex entrance sensor.
16	Paper does not reach the duplex exit sensor
17	Paper does not reach the 1-bin tray exit sensor.
20	Paper does not reach the finisher entrance sensor
21	Paper does not reach the finisher shift tray exit sensor.
23	Paper does not reach the finisher staple tray paper sensor.
24	The finisher stack feed out belt H.P sensor does not turn on.
26	Finisher paper taking out error
27	Finisher drive error
28	Finisher tray lift error
29	Finisher jogger drive error
30	Finisher tray shift drive error
31	Finisher staple error
32	Finisher stack feed-out error
33	Finisher feed out error
34	Finisher no response
53	Paper caught at the upper relay sensor (from paper tray unit)
54	Paper caught at the lower relay sensor.
55	Paper caught at the vertical transport sensor (optional paper tray unit).
56	Paper caught at the LCT relay sensor.
57	Paper caught at the upper relay sensor (from by-pass)
61	Paper caught at the registration sensor.
62	Paper caught at the paper exit sensor.
63	Paper caught at the bridge relay sensor.
64	Paper caught at the bridge exit sensor.
65	Paper caught at the duplex entrance sensor.
66	Paper caught at the duplex exit sensor.
67	Paper caught at the 1-bin tray exit sensor.

Document Feeder

Code	Meaning
01	Jam at power on.
05	Original does not reach the registration sensor.
06	Original does not reach the original exit sensor.
07	Original does not reach the original reverse sensor.
55	Original caught at the registration sensor.
56	Original caught at the original exit sensor.
57	Original caught at the original reverse sensor.

1.4.2 PAPER SIZE

Code	Paper Size	Code	Paper Size
05	A4 sideways	86	A5 lengthwise
06	A5 sideways	87	A6 lengthwise
07	A6 sideways	8D	B4
0E	B5 sideways	8E	B5 lengthwise
0F	B6 sideways	8F	B6 lengthwise
11	Prepaid reply post card sideways	91	Prepaid reply post card lengthwise
12	Post card sideways	92	Post card lengthwise
24	8.5" x 14" sideways	A0	11" x 17"
26	8.5" x 11" sideways	A4	8.5" x 14" lengthwise
2C	8.5" x 5.5" sideways	A6	8.5" x 11" lengthwise
84	A3	AC	8.5" x 5.5" lengthwise
85	A4 lengthwise		

1.5 OTHERS

1.5.1 SC630 [RDS COMMUNICATION ERROR]

Frequent occurrence of SC630 indicates a problem in the customer's communication line or line adapter. To maintain the communications environment in good working order, it is necessary to make planned inspections periodically.

1.5.2 PM PROCEDURE OR OTHER MAINTENANCE

Before beginning PM or other maintenance procedures, SP5-816-2 should be set to "0". This will disable the RSS function. When maintenance is completed, SP5-816-2 should be set to "1". This will re-enable the RSS function.

NOTE: The RSS function will remain disabled for four hours. Therefore, if maintenance for longer than four hours is required, SP5-816-2 should be set to "0" again to disable RSS.